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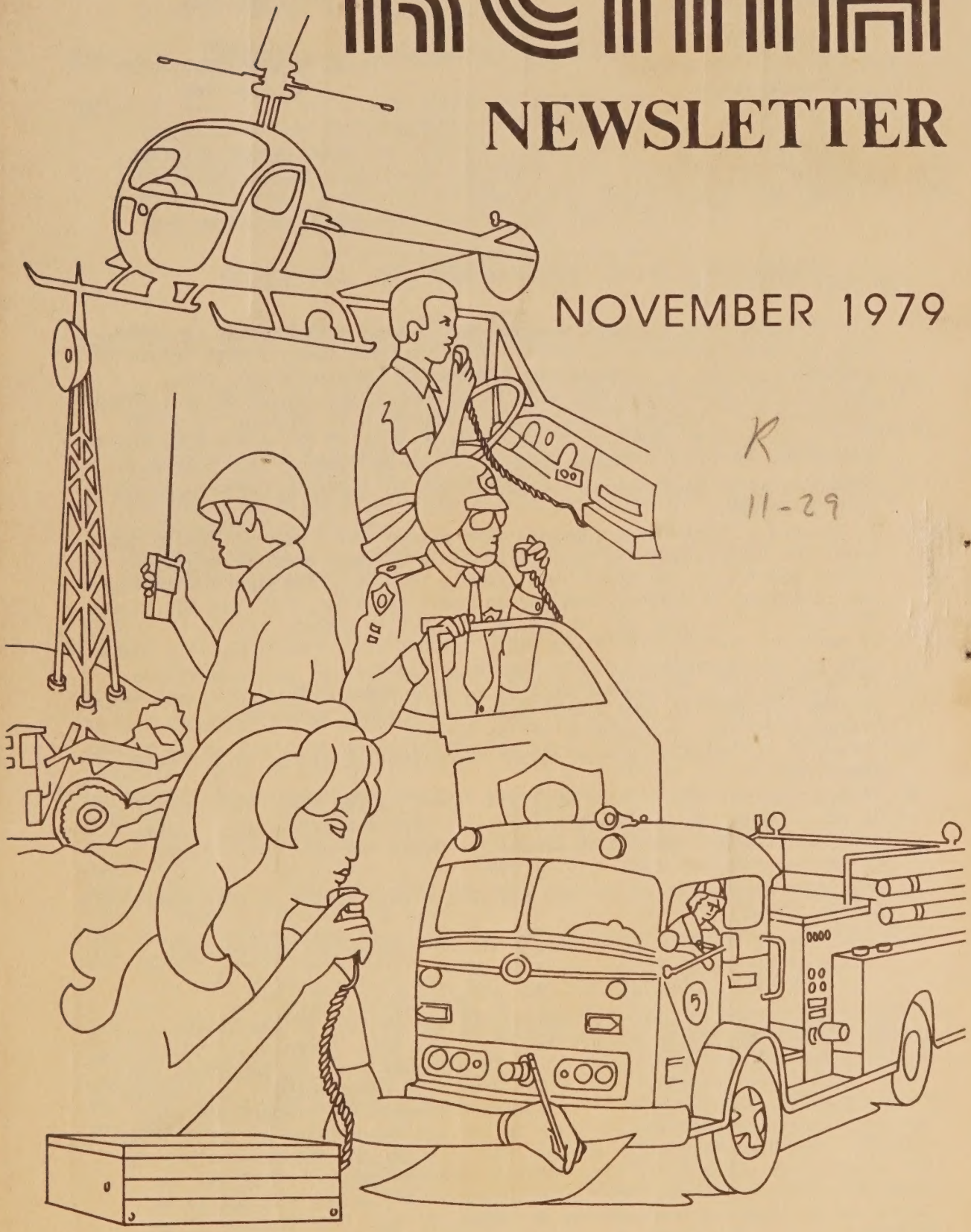
RCMA

NEWSLETTER



NOVEMBER 1979

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RCMA BOARD OF DIRECTORS

PRESIDENT
Jerry Short (CA-OR-002)
(714) 772-1259

VICE PRESIDENT
Bob Leef (CA-OR-033)
(714) 737-5333

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ANARC REPRESENTATIVES
Iden Rogers (CA-RI-001)
Jerry Short (CA-OR-002)
Bob Leef (CA-OR-033)

FOR YOUR INFORMATION

1. All club business, unless otherwise noted, must be addressed to: RCMA, P.O. Box 4563, Anaheim, CA 92803. This includes matters that relate to renewals, changes of address, Newsletter delivery problems, etc.
2. Input to the RCMA Newsletter must be mailed to the proper editors whose addresses are included in the column headings. If in doubt or if no particular column seems to be appropriate, send it to: RCMA, P.O. Box 4693, Riverside, CA 92514. Please do not include matters of club business.
3. RCMA Newsletter back issues (reprints) are no longer being offered for sale to members.
4. To forward a letter to a specific RCMA member whose address you do not know, put your message to that person in a stamped envelope with your return address in the upper left corner. Put this and your instructions for remailing in another envelope and mail to: RCMA, P.O. Box 408, Earp, CA 92242.
5. It would be appreciated if you would include your RCMA membership number with all correspondence to the Newsletter Editors or to Headquarters.
6. If you require a reply when writing to RCMA Headquarters or one of the Editors you MUST include a self-addressed stamped envelope.
7. Please write only on one side of the paper.
8. Please do not combine in one letter items that should go to different addresses.
9. If you are inclined to type what you submit to the Newsletter, please do not exceed a 6¼ inch column width and please single-space. Doing this may save an editor from having to retype the material. Please do not use "*script*" type.
10. Your RCMA membership number and expiration date appear on your Newsletter mailing label.
11. Your copy of the Newsletter should arrive between the 2nd and 3rd Friday of the month for which it is dated.

The RCMA Newsletter is published monthly by the members of the RADIO COMMUNICATIONS MONITORING ASSOCIATION, P.O. Box 4563, Anaheim, CA 92803. Subscription rate/membership fee is $8.00 per year for U.S. residents and $10.35 (U.S.) for persons in all other countries (dues subject to change).
Information contained herein is primarily obtained from members and does not necessarily present the position or reflect the opinion of the RCMA as a whole. The RCMA Newsletter editors and officers are not responsible for the accuracy or validity of information contained herein. Material and comments presented in the "Monitoring and the Law" column are not to be construed as legal interpretations or legal advice. Reproduction of any material in this Newsletter is authorized providing the source (RCMA) and the address are given (this excludes direct photocopying).

NOVEMBER 1979 ISSUE NO. 46

** Calendar **

NOV. 16 --- Meeting/tour 8 PM Orange County Communications, 481 The City Drive, Orange. West of Santa Ana Freeway, ¼ mile south of Chapman Ave.

NOV. 23 --- December Newsletter deadline

DEC. 12 --- If you would like to share in interesting conversation while preparing Newsletters to mail, your help would certainly be appreciated. Meet at the Euclid Branch of the Anaheim Public Library (on Euclid South of Ball Rd. just South of the fire station). Starting time is 6:30 PM. For information call Jerry at 714-772-1259

Reports of Meetings and Officers

SOME TOPICS OF INTEREST FROM THE SEPTEMBER 28th BOARD MEETING

1. The President and First Vice President had a long discussion with the supervisor of mail processing at the Anaheim Post Office about the problems with the mailing of the September Newsletter. He was unable to explain what happened...If you have not received the September issue, please contact the Secretary.
2. Interim By-Laws were approved by the Board and will be published in the November Newsletter.
3. The Board agreed to contact an attorney with regard to becoming a non-profit corporation.

RCMA TOUR OF CHP COMMUNICATIONS FACILITY IN LOS ANGELES

On Friday the 19th of October, about 60 persons (mostly members of RCMA) had a tour of the California Highway Patrol communications facility in Los Angeles. They were given a look at the watch room and dispatch center which includes about 10 dispatchers seated at modern computerized consoles. One of the CHP officer's held a question and answer session before the tour began and another explained the computer system that is used for record keeping within the facility and is connected with other law enforcement computer systems. Due to the fact that it was the first rainy night of the season in Los Angeles and the dispatchers were very busy and also to the fact that so many people turned out for the tour, only a short time could be spent in the actual dispatch room. But it was a very interesting tour and the CHP personnel were all friendly and willing to answer questions.

A short session before the tour was conducted by Jerry Short, President. On behalf of the RCMA, a plaque was presented to Gene Hughes, Editor of "Police Call", in appreciation for his promotion of the club which has done much to boost our growth. Iden Rogers, 2nd Vice President and Newsletter Editor, was also presented with a plaque in appreciation for his "devotion, enthusiasm and participation as an outstanding officer and member." LR

SUMMARY OF TREASURER'S REPORT
For Period Ending October 15, 1979

Balance as of September 15, 1979		$ 814.98
Received for membership:		
New members (95)	$ 751.77	

Reports of Meetings and Officers (continued)

Renewals (46)	373.35		
Received for back issues	18.00		+ 1143.12
Expenses:			
October Newsletter (printing, postage, etc.)		$ 635.30	
Applications & info sheets (printing)		26.18	
Officers' expenses		51.53	
Membership Chairman's expenses		25.23	- 738.24
	Balance		$ 1219.86

For a detailed report send a self-addressed stamped envelope and one extra First Class postage stamp to: RCMA, P.O. Box 4693, Riverside, CA 92514.

INTERIM BY-LAWS OF R. C. M. A.

Article I, Name. The name of this society shall be Radio Communications Monitoring Association.

Article II, Object. (As shown on information sheet)

Article III, Membership. PART A: Any person shall be a member providing they pay all dues and/or fees. PART B: Removal from membership may be accomplished by a 2/3 vote of the Board of Directors. PART C: Annual dues shall be set by the Board of Directors, and be payable in U. S. funds in advance. Officers are exempt from dues while in office.

Article IV, Officers and offices. Officers of the society shall consist of President, First Vice President, Second Vice President, Secretary, and Treasurer, who together will compose the Board of Directors. The first three will be elected by vote of the general membership in January and will assume office February 1st.

On a ballot listing all candidates the person receiving the most votes will be the President, second highest First Vice President, and third highest Second Vice President. In March the Secretary and Treasurer will be voted on individually, and will take office on April 1st.

Vacancies during the year will be voted on by the membership present at a general meeting, except that the First Vice President will automatically assume the office of the President should the latter no longer hold his office. In addition, upon resignation of the President or First Vice President during the first 60 days following the annual election the Second Vice President will become First Vice President and the candidate that received the fourth highest vote becomes Second Vice President.

Briefly outlined, officers duties are: President - coordinates all offices, suggests goals, appoints committees, chairs all meetings; First Vice President - assists President, organizes meeting programs and locations; Second Vice President - handles public relations, promotes membership, supervises RCMA Newsletter; Secretary - handles correspondence and membership records (except dues payments), keeps detailed minutes of meetings and publishes a summary version monthly in the Newsletter; Treasurer - handles club finances by receiving and disbursing money, provides Secretary with dues status of members, gives in every RCMA Newsletter a report of balance on

hand, expenses, and income.

ARTICLE V, Meetings. Monthly general meetings in the greater Los Angeles area will be held the third Friday of each month at 8 PM at the location shown in the Newsletter. RCMA members in other areas may schedule general meetings at their convenience, subject to prior notification to RCMA Board of Directors. Board of Directors meetings will be scheduled as required, by the Board of Directors. The date and time of a scheduled general meeting for a given date may be changed by a majority vote of the Board of Directors provided that such change is disseminated to members by the best possible means.

Article VI, Parliamentary authority. Rules contained in the current edition of Roberts Rules of Order Newly Revised shall govern the association in all cases to which they are applicable and not inconsistent with these By-Laws.

Article VII, Amendment of By-Laws. These By-Laws may be amended by a 2/3 affirmative vote of those members who respond. It is also understood that they may be superceded upon incorporation of the society, in which case an approval vote of the membership will be necessary.

Article VIII, Dissolution. This society is organized and operated exclusively for non profit services, and no part of any net earnings shall incrue to the benefit of any member. Private properties and assets of this organization shall be distributed to such charitable societies as may be selected by the Board of Directors or general membership, in compliance with the laws of the State of California, upon dissolution of the RCMA.

By-Laws Committee
Bob Leef, (CA-OR-033)
Noel Robertson (CA-LA-083)
September 7, 1979

RCMA ELECTIONS

If you are a member who is able to attend RCMA Board Meetings once a month (usually held in Orange County, CA) and are a reliable, honest person and want to become involved in club business, please consider running for an RCMA office. Ballots will appear in the December issue, so we must hear from you now or maybe yesterday. Please contact any of the club officers.

RCMA NEWSLETTER REPRINTS

RCMA Newsletter back issues have been offered for sale to members in six month lots for the last several months. We have felt that some of the information contained in them would interest and benefit members. Our club is growing by leaps and bounds which means increased orders for back issues. The back issues have been reproduced by photocopying, collating and stapling by volunteer help. It is at a point now where to really keep up with the orders and do it efficiently, it would be necessary to have a printer reprint back issues by the hundreds. To have enough back issues reprinted to make preparing and selling them not such a task would cost about $1400. Even though the money received from back issue sales is calculated to just cover costs, we cannot afford the outlay of such a large sum at this time even though eventually we would get our money back. The Board decided to simply stop offering them for sale. It is possible that at a later date they will again be offered for sale or perhaps a portion of them rather than all of them. We can't guarantee it.

THE editor's column

Iden Rogers, P.O. Box 4693, Riverside, CA 92514

RCMA TOPS THE 1000 MEMBER MARK

One thousand is not really a magical number. Our decimal system no doubt results from humans having evolved with ten fingers. Had we evolved with eight or twelve fingers, our number system would probably have been different and the number which we would choose to use in our headline would equal a different quantity of members. Needless to say, our club is a success as evidenced by the fact that we do now have 1000 members and only four and one-half years ago all members could be counted on two hands. Now, it takes fifty people using all their toes and fingers! With continued effective club leadership and hard-working editors we could reach 2000 by the end of 1980.

I'd like to take this opportunity to thank members who have contributed material for publication and thank all the column editors for helping me to make this publication possible.

BLANK PAGES IN THE OCTOBER ISSUE

There were four blank pages in the back of the October issue. Don't be alarmed, no material is missing. The printer took the liberty to use a more automated, labor-saving method of printing and cutting pages which as a result produced blank pages at the end.

NEWSLETTERS ARRIVE LATE

The September issue arrived late for many members in many parts of the country. The problem was caused by our friendly Postal Service on this end. Club officers visited the Post Office on at least three separate ocassions inquiring as to how the problem was caused and how it could be avoided in the future. It is my understanding that the attempts made by the club officers to determine the exact source of the problem were not met with smiles and cooperation from the Postal Service employees. We sincerely hope that the October issue and this issue arrived on schedule. "On Schedule" means in about the third week of the month for which they are dated. We have had good luck with our Bulk Rate which allows us to send up to three ounces for 8.4¢ each. If we had mailed the September issue First Class, it would have cost 41¢ each, so you can see the savings to you by continuing the Bulk Rate. If the Bulk Rate begins to

THE editor's column (continued)

fail us consistently, we will be forced to increase dues, go to lighter weight paper, and mail First Class. SPEEDX (a fellow ANARC club for shortwave listeners) has a 52 page monthly publication using lighter weight paper which is mailed First Class for 28¢ each.

RCMA EDITORS NEEDED

Again, I must ask for help. I cannot continue with my present workload as RCMA editor. With competent help to reduce my workload, I can continue. If you are a person who can consistently and reliably help me month after month with some part of the workload, please contact me soon.

Bob Leef, our First Vice President, has taken over as editor of the "Calendar" section and "Reports of Meetings and Officers" which helps me. Should he not continue as an RCMA officer, after elections, some future Board Member will have this responsibility.

The Board will soon assume the responsibility of attending to the ordering details that accompany our paste-ups that go to the printer. This also will help.

Chuck Gysi, our new "Business, Etc." editor has graciously volunteered to help with the paste-up. Since he lives on the other side of the country, there may be some problems of practicality. If these can be worked out, some editors may be asked to send their columns to him.

If I do get sufficient help and do continue as "Managing Editor", I will probably "up" the deadline by one week to allow more time to make final preparations before sending it off to the printer.

Without help I cannot continue as editor. As mentioned in the September issue, I will continue my present duties through the completion of the December issue. I am willing to help in 1980 only if my present workload is shared with others.

Ideally, I would like to find a reliable, interested person or persons in the Anaheim area to do the final paste-up. Experience in paste-up is not required. I am willing to teach these skills to and work with whoever will be helping me at first. This person(s) would not have to correspond with members. Typing would be required but only to a very limited extent. If you think you might be interested, PLEASE contact me. I need your help!

RCMA "SOCIABLE" MEMBERS DIRECTORY

In the September issue it was proposed that RCMA prepare a membership directory that: 1) lists only members who want to be listed, 2) lists only those who are interested in actively corresponding, 3) lists only those who say they will answer letters written to them by other members, and 4) will be distributed only to those who are listed in it.

To get a feel for the extent of such a project, I asked all those who would be interested in being in such a directory to write in. Far fewer members responded than expected which may partially be due to the late arrival of the September issue. Several volunteered to help type. The following is the list of those whose response was received by Oct. 15:

CA-RI-011 Mike	GA-003 Reuben	MO-002 Mike
CA-OR-012 Jeff	OR-005 Ben	CT-001 Ed
CA-LA-113 Robert	NJ-005 Tony	IA-001 Lee
CA-CC-004 William	OH-002 Larry	MO-001 Luther
CA-LA-168 Fred	IN-002 David	IL-008 Mark
CA-YO-001 Bob	MI-001 Larry	PA-005 Chuck
OH-008 Harold	PA-003 Tom	
TX-011 Ronald	NY-020 Chris	

Even if the directory lists less than 50 members, it is still worth it. We'll try to get it underway by providing instructions in the December issue.

THE editor's column (continued)

CB MAGAZINE

I have never been inclined to seek out and read magazines on Citizens Band. Recently I was offered an October issue of "CB Magazine" to look over. I thought I should since RCMA is receiving generous, free publicity in this magazine. My first observation was that a variety of radio topics are covered and CB is just one among them and that the name "CB Magazine" is truly no longer appropriate. The magazine is obviously more than a CB magazine and a name change would seem in order. In fact, if it keeps heading in the direction it's going, I might have to subscribe to it. As an indicator of its changing content a member, Leo (CA-RI-010), mentioned in a letter to me that he dropped his subscription to "CB Magazine" because he wanted a citizens band magazine and not a general radio hobby magazine. So, things are changing. Generally I find the magazine attractive, interesting and well put together.

One of my real objections regards the inclusion of radar detector advertising and radar detector articles. Using radar detectors is not a radio hobby and I feel this subject should not be included anymore than articles on how to use scanners to assist dope dealers and robbers. I do also feel that only legal use of CB should be included in the magazine. It looks like "CB Magazine" is headed in a good direction but it should leave radar detectors and illegal CBing to other publications.

If you haven't picked up a copy recently, you might be pleasantly surprised.

From MIKE (CA-RI-011): I am not in agreement with encouraging closer relations with any CB magazines. I became a CB operator in 1964 and saw it deteriorate to its present state. I used to subscribe to "CB Magazine" to keep up on the goings on, plus some years ago they had a P.S. band monitor column. I quit my subscription because the magazine was catering to the "good buddy" and "trucker" types. CB was never and still is not meant to be "hobby" radio. I can't seem to find the words to describe my feelings so I'll try to generalize: Most CB'ers are not "serious" radio enthusiasts and I would not encourage them to become involved in P.S. monitoring. I think it would increase the "ambulance chasing" activity.

From MIKE (MO-002): On the whole, the magazine seems professionally done, and ads are done in a tasteful manner. The articles on the product reviews and technical notes are well done. Without the illegal CB bullshit and radar column, it would be an excellent magazine.

From RONALD (TX-011): I have had a subscription to "CB Magazine" since 1975 and it has some very important articles in it and it is a very informative magazine. There is a column in the magazine called "Monitoring" that gives persons who would like to go into monitoring a good start. There is a column in this magazine called "Product Report" that gives good information on new scanners. For example, the October edition gave good specs on the new Regency K-500 scanner. They also have a column listed as "Lab Test" that gives descriptions of operation, operational evaluation, and technical evaluation of different makes of scanners that gives a person an idea of what type scanner they would want when getting into monitoring. There is also a column called "Shopping Guide" that gives information on new scanners in the future, for example, M-100 Regency programmable mobile scanner and Bearcat's 300 pre-programmed scanner. It lists the suggested prices and to write to the companies for more information on the scanners. The RCMA article is also very informative. If it wasn't for the RCMA column being added to "CB Magazine", I would probably not have had the chance of being a member of your fine organization. I hope it brings in more members.

THE editor's column (continued)

GRUMBLE GRUMBLE

Please read "For Your Information" inside the front cover.

ITEM #1. Members often contact me regarding Newsletter delivery problems or changes of address. Please write to the Anaheim P.O. Box.

ITEM #5. Many members still send letters or Newsletter input without their RCMA membership number. This causes several minutes of extra hassle per member when the number is omitted. Very new members will not know their numbers until a regular mailing label appears on their Newsletters and in this case no number is required.

ITEM #6. If you want a reply, please include an SASE.

ITEM #7. Many members still write on both sides of the paper. Please just write on one side. Don't ask why, just do it.

ITEM #8. Items are frequently received that should go to separate addresses or editors. Please read all the column headings carefully and send material to the proper places.

ITEM #9. Quite a few members send in typed material but it's very often wider than 6¼ inches. If the material is acceptable as is, it can be used directly without retyping if you would only keep your column width to 6¼ inches maximum.

Please help me out by trying to follow these simple rules. Try to keep me happy --- I try to keep you happy by helping to provide the very finest monitor listeners' publication there is.

WONDERED ABOUT SHORTWAVE?

If you are considering shortwave or are already involved in shortwave listening, you owe it to yourself to check out our fellow clubs that belong to the Association of North American Radio Clubs (ANARC). Send a self-addressed stamped business size envelope to: ANARC, 557 N. Madison Ave., Pasadena, CA 91101 and request the list of ANARC clubs. This information will briefly describe each club, its dues and cost for a sample copy of their publications

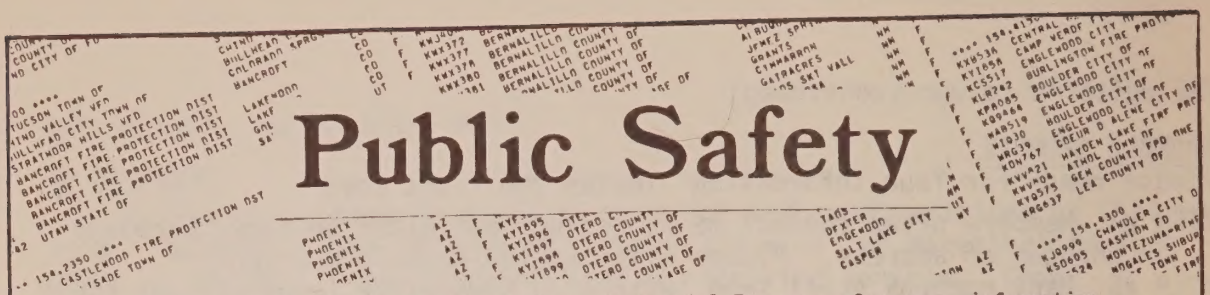
Also, Bob Grove, our Military and Federal Gov't column editor has prepared a cassette tape that describes what can be heard on the shortwave bands with many off the air recorded samples. He also touches on antennas, receivers, etc. It is a very informative tape and one that might be of interest to those who are considering a shortwave receiver to expand their listening potential. Send Bob an SASE for info (his address appears in his RCMA column headings). This is not an ad, it is offered as information in the same vein that I would recommend a good book.

800-1000 MHz Converter

Chuck, the RCMA Technical Topics editor, has designed a solid state converter for use with existing scanners that will down convert any 10 MHz segment of this new band to the 30-50 MHz band. He intends to manufacturer these and offer them for sale for about $80 each, pretuned, and probably will run a paid ad in the December RCMA Newsletter. He says it works quite well.

"RCMA MONITOR"

Several members wrote in to say that they favor the idea of our publication being called "Monitor" or "RCMA Monitor" or "The RCMA Monitor" instead of "RCMA Newsletter". Newsletter may no longer be the best choice of words. At first it was, of course, with only a few pages each month but now by most definitions it is truly a magazine. There is nothing saying that our magazine cannot be called "RCMA Newsletter" though. Chuck (Pa-005) offered the following catchy wording that could accompany a name change: "The 'Monitor' monitors monitoring...."



Public Safety

This column is for reporting Public Safety and Special Emergency frequency information, radio system details, radio codes, dispatch areas, unit numbering systems, etc. for police, sheriff, fire, forestry (except USFS), fish and game, highway patrol, state police, prisons, prisoner work camps, local government, highway & street maintenance, port authority/bridge maintenance, animal control, ambulances, paramedics, hospitals, life guards, ski patrol, search & rescue, flood control, civil defense and disaster organizations. Input and questions for this column must be sent to the proper regional Public Safety editor listed below.

WHAT GOES WHERE

You will note that "The Other Column" has a new name, "Business, Etc." This was proposed by Chuck Gysi, the editor of that column. It does seem a little more professional and does reflect to a large extent the general nature of the services in that column since most of the systems users are "in business" as opposed to being departments of government at some level. There are exceptions, however.

Certain difficult decisions had to be made regarding which specific services would go in the "Business, Etc." column and which would go in the "Public Safety" column to cause the least confusion to members and give some sort of order to it all. It is not 100% refined but it should be workable.

It was tempting to put only municipal, county and state licensees in the "Public Safety" column and put the others in the "Business, Etc." column. This would have caused too many problems. Serious thought was given to listing in the "Public Safety" column only those services which have FCC Frequency allocations with a designator that starts with "P", i.e. PF, PH, PL, PM, PO, PP & PS (listed at the beginning of Part III in "Police Call") but this too had problems. Actually, what we ended up with is the FCC allocation system but with exceptions. Most licensees noted in the PS column heading do have FCC allocations as mentioned but not all. Also, some of the services listed in the "Business, Etc." column are government licensees.

Here are some of the exceptions ---

1) Both campus police (sworn officers with full police powers) and campus security are listed in "Business, Etc." even though the former are state licensees and not in business. It seemed simpler to list all school/college related frequencies in one column rather than dividing them. The clincher for me was when I learned of a college system that had campus police, campus security and campus parking on one frequency and another system that had school buses and school district business on a single frequency.
2) Private and municipal utility companies are listed in the "Business, Etc." column together due to similar activities.
3) All ambulances are in the PS column even though some may be private companies on private business channels and some may be city operated ambulances on a fire channel, etc.
4) "Local government" is listed in the PS heading yet some activities appearing on local government channels may be listed in the "Business, Etc." heading. Use your best judgement and, when in doubt, send to your PS editor.

I am indebted to Chuck Gysi, the "Business, Etc." editor, for his detailed analysis and proposals on establishing the dividing points between the two columns. I also thank Chris (CA-OR-050) for helping me sort out my thoughts regarding school/college frequencies.

You will note in this month's PS column that some listings appear

that are now listed in the "Business, Etc." column heading. This is due to the fact that some services were switched to other columns after the PS editors had prepared this material.

Please read the column headings carefully and send your material to the editor that handles or comes closest to handling the services you report. IBR

PUBLIC SAFETY - EAST

Send Public Safety and Special Emergency frequencies, radio system details and questions for Connecticut, Delaware, District of Columbia, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia and West Virginia to: Richard Barnett, P.O. Box 428, Newton Highlands, MA 02161.

I am very glad to have been chosen to write the eastern United States section of the "Public Safety" articles. I will try to present the most interesting, in-depth and seemingly correct data which is sent in to me. If the frequencies are straight off of Police Call,with no explanation of unit numbers, system designs, areas of operations, channel numbers, etc., then they are really useless so please don't waste time sending them in. If the frequencies are related to the other column please send them in to Chuck and not in to me. Below is a great example of what an excellent data sheet looks like.

FROM CHUCK (MD-004)

MARYLAND STATE AGENCIES

State Police

Ch.1	39.100	Statewide, Cumberland B-"C", and Oakland Det.
Ch.2	39.260	Frederick B-"B" and Hagerstown B-"O"
Ch.3	39.300	College Park B-"O", Forestville B'"L", and Waldorf B-"H"
Ch.4	39.340	Bel Air B-"D" and Northeast B-"F"
Ch.5	39.140	Annapolis B-"J", Glen Burnie B-"P", Leonardstown Post, Prince Frederick Detachment
Ch.6	39.320	Rockville B-"N", Waterloo B-"A", and Westminster B-"G"
Ch.7	39.380	Randallstown B-"K" and Valley B-"R"
Ch.8	39.240	Cambridge Det., Centerville Post, Chestertown Det., Denton Det., Easton B-"I", K Salisbury B-"E"
Ch.9	44.740	
Ch.10	44.900	
	151.04	JFK Toll Highway (I-95)
	155.475	Barracks to Barracks intercommunications

Toll Facilities: Police

453.100	Baltimore Harbor Tunnel (I-93) & F.S. Key Bridge (MD-695), Outer Baltimore Harbor
453.575	W.P. Lane Bridge (US301/50), Chesapeake Bay and Susquahauna River Bridge (US 40)
453.975	Nice Bridge (US 301) Potomac River

Baltimore/ Washington Airport (BWI)

453.900	Police & Security
453.800	Fire
154.980	Maintenance

Public Safety - East (continued)

154.055 Baltimore Harbor Port Authority (repeater)
47.500, 44.740 Civil Defense
37.800 National Guard

Other Police & Security

453.55 Washington DC Metro Police intercommunications
460.05 Baltimore Metro Police intercommunications
155.775 State Capitol & Office Buildings security, Annapolis, University of Maryland
453.575 University of Maryland, College Park
155.265 State Hospital Centers
464.825 Landover Mall Shopping Center Security
413.375 Andrews Air Force Base (434.975)
173.5875 Andrews Air Force Base Fire Department

I will have more of Chuck's excellent report in the next issue. Before I go on I would like to thank Chuck Gysi for sending me his Public Safety info he received when editor of the Mid-Atlantic states. I'll be sending Chuck any information that I receive that will be in his column.

FROM EDDIE (NY-041)

New York City Police Radio Frequencies

Manhattan

Division	1	Precinct	1-5-6-7-9-13	Frequency	476.5625
"	2	"	Midtown S & N	"	476.5875
"	3	"	Central Park	"	476.3125
"	4	"	24-26-30-34	"	476.3625
"	6	"	25-28-32	"	476.6375

Bronx

Division	7A	Precinct	40-42	Frequency	156.030
"	7B	"	44-48	"	155.700
"	8	"	41-43-45	"	155.670
"	9	"	46-47-50-52	"	155.640

Brooklyn

Division	10	Precinct	60-61-62-66-68	Frequency	151.205
"	11	"	72-76-78-84	"	151.460
"	12	"	63-67-69-71-75	"	151.370
"	13	"	73-77-79-88	"	151.160
"	14	"	81-83-90-94	"	151.235

(editor's note: Are you sure about the 151 frequencies? If so why do they have them and not regular channels? Was there a lack of openings?)

Queens

Division	15A	Precinct	100-101-106-113	Frequency	476.5375
"	15B	"	102-104-112	"	477.0375
"	16A	"	103-105	"	477.1125
"	16B	"	107-109-111	"	476.4875
"	17	"	108-110-114	"	476.8125

NEW YORK CITY FIRE DEPARTMENT

Bronx 154.190

Public Safety - East (continued)

Manhattan	154.250
Brooklyn	154.370
Queens	154.400
City Wide & Fire Boats	154.430

(editor's note: I don't know about other parts of the country, but here in Massachusetts the NYC Fire Department is received perfectly on skip at least two, sometimes three times a week)

NEW YORK CITY EMERGENCY MEDICAL SERVICE AMBULANCES

CITY-WIDE	478.0125
Queens	477.9125
Staten Island	477.8625
Manhatten	477.8375
Brooklyn	478.2625
Bronx	478.2125

DON (MD-007) would like to learn the details of the southern New Jersey police nets that operate on 155.730, 156.210 and 158.970 MHz. If anyone has this info, please send to this column and contact DON BLEVINS, 1715 Earhart Rd., Baltimore, MD 21221.

PUBLIC SAFETY - CENTRAL

Send Public Safety and Special Emergency frequencies, radio system details and questions for Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Tennessee, Texas and Wisconsin to: Mike Redman, P.O. Box 1177, St. Charles, MO 63301. (314) 946-4331

Greetings and welcome to this new expanded column. I have only a few comments, and then we'll get right to the feature articles. First, my thanks to the RCMA Newsletter Staff for showing their confidence in me by expanding my column. I hope to hear not only from members in the states previously covered, but the many new states as well. Please send me your frequency contributions, ideas, comments, and criticisms, for this column can always stand improvement, and I want it to be your column- just the way you want it to be.

MIKE (IL-014) has supplied me with a comprehensive sheet map of the Chicago Police Department showing zone boundaries, police districts, and frequencies. The map is 8 1/2 x 11 in size, and copies may be obtained simply by sending Mike a self-addressed stamped envelope. Write to Mike Yanul (IL-014) 5601 S. St. Louis Ave., Chicago, IL. 60629.

BOB (KS-001) has provided a list of 10-codes used by the Kansas Highway Patrol and many county and municipal departments. It was too lengthy for publication, so I have retyped it on a 8 1/2 x 11 sheet and will have copies available. If you would like a copy of Bob's list, merely send me a self-addressed stamped envelope and an extra 15¢ stamp to cover copying costs, and one will be sent direct to you.

EMERGENCY MEDICAL SYSTEMS RADIO

One of the more interesting facets of monitoring can be the exciting and urgent messages heard over Emergency Medical

Systems Radio (EMS). Part 90, FCC Rules and Regulations, describes those eligible for EMS licensing as basically hospitals, clinics, public health facilities, ambulance companies, rescue organizations, physicians' organizations, veterinarians, entities operating school buses, and beach patrols. Our discussion will center primarily around EMS systems involved in hospital communications. While the above extraction from Part 90 involves those licensed under the Special Emergency Radio Service, the term EMS has come to identify hospital-paramedic-ambulance communications.

Most hospitals are licensed on 155.340 Mhz. In many areas, this frequency may be the only one issued, and serves ambulance-to-hospital and hospital-to-hospital needs well. In larger areas, several VHF frequencies are used, as well as additional channels for paging and security, not to mention the UHF telemetry and dispatch network. Often, the paging and security channels are licensed in the Business Radio Service. Doctor paging is generally not acceptable on 155.34.

In some areas, a 'regional' hospital is selected as a 'net control station' of sorts, and operates on both 155.34 and 155.28 Mhz. This 'regional' hospital alerts other hospitals in its 'region' in the event of medical emergencies, disasters, drills, etc. The regional hospital transmits on 155.28, but receives local hospitals on 155.34. Most hospital to hospital calling is done with dial-type encoders. Many ambulances have a similar system to call the hospital, but the trend is growing to use tone squelch- with a subaudible tone assigned to each hospital. It's faster for the ambulance than dialing a 9 digit number. The dialer-type encoders are used only on VHF- UHF systems use tone squelch, if at all.

The newest approach to EMS communications is UHF. There are 8 pairs of frequencies used primarily for telemetry, but voice instructions are given as well. These channels and their commonly used identifiers follow:

MED 1	463.000 Base	468.000 Mobile
MED 2	463.025 Base	468.025 Mobile
MED 3	463.050 Base	468.050 Mobile
MED 4	463,075 Base	468.075 Mobile
MED 5	463.100 Base	468.100 Mobile
MED 6	463.125 Base	468.125 Mobile
MED 7	463.150 Base	468.150 Mobile
MED 8	463.175 Base	468.175 Mobile

One will not encounter the typical repeater systems, where only the base frequency is needed. Both base and mobile channels are needed to hear the complete conversation, as no 'base repeater' is used. There sometimes are mobile repeaters, however. The walkie-talkie or portable type radios can be carried to the scene of the injury, where the paramedics select the channel and set up the equipment. Signals, including voice and telemetry, can be transmitted to a mobile repeater on the ambulance or rescue truck, and then on to the hospital. The portables use a 1 watt system on 458.025, 458.075, 458.125, and 458.175 Mhz. This is received by the mobile, which retransmits these signals on the appropriate 468 Mhz. frequency, which is then received by the hospital on 463 Mhz. These portables either

may be walkie-talkie style, or the larger type, like we used to see on "Emergency". Most have 8 to 10 channel capability. The 463 Mhz. MED channels can be used for both Base and Mobile operation, but at least in this area, seldom are. It would be possible for the 1 watt mobile input frequencies to be one of the 463 Mhz. channels instead of the 458 Mhz. frequencies.

Coordination and dispatch of EMS systems is becoming more popular on the frequencies 460.525, 460.550, 462.950, and 462.975 Mhz. (Mobiles, 5 Mhz. higher). the 460 series is being phased out in favor of the 462 series; after all, they are right next to the MED channels. Some systems use repeaters, and others do not. Anyone involved in EMS equipment dispatch is eligible for licensing-police, fire, etc.

Most equipment being manufactured for mobile units is of 10 channel design, and includes the 8 MED channels and the two 462 Mhz. channels. Some units also include an additional VHF radio for dispatch, VHF Hospital communications, Nationwide Mutual Aid, etc. The MARC (Medical Air Rescue Corps) Helicopter [mentioned in the June Newsletter] utilizes 155.340 and 155.475 Mhz., and serves hospitals within 100 miles of St. Louis. Telemetry capability is unknown. Hospitals, if so equipped, must monitor at least 4 MED channels; mobiles must have all 8. This allows switchover in case of malfunction. Hospitals, of course, then must have the proper telemetry decoding equipment, along with voice capability on UHF. Most hospitals elect a standy-by or monitor frequency; a primary frequency where they can be reached. Once you find this channel, one would not have to monitor all 8.

In Illinois, the system is primarily VHF, although UHF is catching on in larger metropolitan areas. The state is divided into regions, with each county having a distinct identifier. The identifier is a number-letter-number combination. For example, 3F45 is an ambulance in region 3, with 3F identifying Sangamon County, and 45 refers to a specific unit. Regional control hospitals operate on 155.280; the remainder on 155.340 Mhz., with 155.22 set aside for dispatch. State police can communicate with ambulances through a duplex system- 155.340/155.460 Mhz. Here is the VHF radio setup:

Channel 1	TX 155.340/RX 155.340	(Amb. to Hosp.)
Channel 2	TX 155.340/RX 155.460	(Amb. to ISP)
Channel 3	TX varies /RX varies	(local control)
Channel 4	TX 155.220/RX 155.220	(dispatch)

In region 4 (Southwest Illinois) channel 3 is 155.160; in region 2 (Chicago area), Channel 3 is 155.400 (Merci 400). The entire system is called MERCI (Medical Emergency Radio Communications of Illinois). The statewide 'common tone' for tone squelch is 210.7 Hz.

In Missouri, the primary frequency is 155.340. Regional hospitals operate on 155.280; and UHF telemetry is generally found only in metropolitan areas. In rural areas, where UHF is yet too expensive and 24 hour emergency facilities are often some distance, a phone patch system exists which can 'connect' an ambulance (via VHF radio) to a Medical Control Center, where physicians' advise is always available. The manual patches are maintained by agencies (sheriffs' offices, ambulance dispatch centers, etc.) that operate 24 hours. In

the Kansas City area, an organization called MARCER (Mid-America Regional Council Emergency Rescue) coordinates use of the MED channels. The ambulance must first contact the MARCER base on 460.525 [listed channels of 462.950 & 462.975 seem not to be used, but are known as MED 9 and MED 10]. The MARCER base takes it from there. Here are the Kansas City area hospitals and their monitored MED channels:

MED 1	Liberty, Mo.	MED 5	Central K.C.Mo.
MED 2	Eastern K.C. Mo.	MED 6	?
MED 3	Johnson Co. KS	MED 7	Kansas City, KS
MED 4	Johnson Co. KS	MED 8	K.C.Mo.Sports Ctr.

In the St. Louis area, regional control on 155.280 is provided by St. Louis City and St. Louis County Hospital. All hospitals use 155.34 for hospital to hospital and ambulance to hospital; 155.22 is used for ambulance to hospital. Hospitals may be called directly on VHF and UHF, and most area ambulances have UHF capability. 462.950 and 462.975 Mhz. are known as Channels 9 and 10 respectively, and are being coordinated into an area dispatch network. 462.950 will be primary dispatch frequency. Here is the UHF hospital setup:

MED 1	St.Joseph/Barnes	MED 5	St. Louis County/Christian
MED 2	St.John's/St.L.City	MED 6	Normandy North & South
MED 3	St. Anthony's	MED 7	Deaconness
MED 4	St. Joseph in St. Charles	MED 8	DePaul/St. Mary's

210.7 is also the common tone for tone squelch in Missouri, and the dialer code of 1-333 is used to call all hospitals for emergency, drills, etc. In St. Charles County, Franklin County areas 155.16 is used for ambulance dispatch and control and for ambulance-to-hospital for St. Joseph's hospital in St. Charles. Missouri ambulances often are equipped with the Nationwide Mutual Aid frequency, 155.475 Mhz., in addition to their EMS frequencies. This allows urgent communications with the State Patrol or other law enforcement agency often needed during extended trips from home base, and coordination in times of disaster.

I hope this article has been informative to those who monitor these channels, and I would like to thank the following who helped make it possible: JOHN (IL-012), DENNY (IL-026), BOB (KS-001), Motorola Communications, Mike Gray-Missouri EMS Communications Coordinator, and the hospitals and ambulances on these channels that make listening so interesting. Comments or questions? Please write!

ILLINOIS STATE PATROL

Primary frequencies furnished by JOHN (IL-012):

B/M Base/Mobile; B Base; M Mobile

District 1	Sterling	42.520 B/M	KSA774,KXM403
District 2	Elgin	42.620 B/M,154.695B/M	KSB233,KBA234 KUN858
District 3	Des Plaines	42.560 B/M,154.935B/M	KSB242
District 4	Crestwood	42.340 B/M	KSB231
District 5	Joliet	42.600 B, 42.700 M	KSB230,KXT894
District 5A	Peru	42.600 B, 42.700 M	KEO371
District 6	Pontiac	42.440 B, 42.720 M	KSA776,KXM277
District 6A	Ashkum	42.440 B, 42.720 M	KLM608,KZA240
District 7	Rock Island	42.840 B/M,154.845B/M	KSB229
District 8	Metamora	42.360 B/M,155.520B/M	KSB228

Public Safety - Central (continued)

District 9	Springfield (Headquarters)	42.660 B/M,154.935B/M	KSA213,KXV466 KXM411,KXC661
District 10	Pesotum	42.540 B/M	KSA464
District 11	Maryville	42.560 B, 42.700 M 154.665 B/M	KSB235,KYQ562
District 11A	Litchfield	(Same as District 11)	KSG897,KYW825
District 12	Effingham	42.520 B, 42.720 M 154.845 B/M	KSB236,KZC644 KZE651
District 12A	Carmi	(Same as District 12)	KSI983,KYW824
District 13	DuQuoin	42.600 B, 42.680 M 154.935 B/M	KSB234
District 13A	Cairo	(Same as District 13)	KSG291,KYW823
District 14	Macomb	42.600 B, 42.720 M	KSA775
District 14A	Pittsfield	(Same as District 14)	KGY335,KXV447
District 15	Oakbrook (Toll Roads)	North- 453.200/,350 South- 453.400/.600 42.66- car to car	KBZ963,KRM754

Statewide: all cars have 42.500- statewide car to car, 155.475 (ISPERN- Illinois State Police Emergency Network, or NLEEF National Law Enforcement Emergency Frequency), 155.460. Bases are also so equipped, using 42.50 as Emergency Services Radio Warning System, 155.460 as inter-troop point to point and ambulance contact, and 155.475. Intersystem point to point is accomplished on 39.460 and 155.370. For more information on the Illinois system, contact JOHN, IL-012.

With that comprehensive contribution, we end this month's column. Don't forget to send in your offerings, comments, criticisms, etc., and thanks for your continued interest.

Last minute update from JOHN (IL-012): "I.S.P. District 12 and 12A have apparently moved high band operations from 154.845 to new 154.680. This was observed last week during a 'tropo' opening." IBR

PUBLIC SAFETY - WEST

Send Public Safety and Special Emergency frequencies, radio system details and questions for Alaska, Arizona, California (except 7 Southern California counties), Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming to: Lyle Galdiera and Bob Gehri, 3205 SW Corbett, Portland, OR 97201.

Send material and questions for the Southern California counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura to: Eric Christensen, 2360 Brentford Rd., San Marino, CA 91108.

Well, by now you've probably learned that the F&RS columns have been revamped and are now called Public Safety West, Central and East. Bob Gehri (WA-007) and I, Lyle Galdeira (OR-009), will be editing the PS West column which includes the states of Alaska, Arizona, Northern California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. The seven Southern California counties will be handled by Eric Christensen.

Now a little bit of background and information. I am a traffic reporter for a major radio station here in Portland, Oregon. My monitoring interests are the direct result of my job, as a traffic reporter should never be caught without his scanners. I have been at it very seriously for the past two years now and because of my working hours I scan federal, fire, state, county, city and press frequencies from early morning to late at night. My equipment includes a BC-250, BC-220, BC-IV and a Regency TMR.

The other half of the PS West editorship belongs to Bob Gehri (WA-007). Bob lives in Vancouver, Washington just north of the Oregon border.

Bob has been monitoring public safety bands for the past 14 years in the Portland/Vancouver area and more recently federal government throughout Oregon and Washington. Needless to say, Bob is a wealth of information.

Bob has also been experimenting with cubical quad antenna design. The results are phenomenal and an article is promised soon for the Technical Topics column.

Bob's equipment includes a BC-250 and BC-220.

Both of us are frantically searching for an out-of-band program for the 220. If you've got one, please send it along.

About the column: Please remember this is your column. It appears in the newsletter for the purpose of informing RCMA members who are interested in public service bands in the western part of the country. Therefore, this column lives and dies by the amount of information you send in. So please keep those cards and letters coming in folks!!!

Bob and I have taken the position of non-control with regard to the PS West column. We will not try to gear it toward own own likes and dislikes nor will we editorialize our opinions unless it is absolutely necessary. Lord knows we get enough of that in our everyday lives! What we will be doing is cutting and pasting and trying to meet our monthly deadline.

As for our own input, Bob and I will always try to include fresh information for the Northwest Oregon-Southwest Washington area.

One final word before we get to the column info. PLEASE do not send in information which already appears in Police Call publications. There is no point in wasting RCMA space for information that is readily available. If you have new data or can tell us about unit numbering systems or ten codes or anything that Police Call doesn't cover...by all means send it in!!!

Speaking of publications, there's a good one that everyone in the northwest portion of the country should have. It's call Police and Fire Radio Callbook by Michael T. McKenna covering public safety, local government, ham 2 meter, mobile telephone, aircraft, railroad, marine, security patrols, news media, state patrols, state & US forestry, medical and emergency nets for Oregon, Washington, Lower B.C. Canada and Alaska. Cost is $5.95. Check with your favorite scanner store first. If you can't find a copy write to Mitchell Publications, P.O. Box 277, Seahurst, Washington 98062 for information.

Here's how the column will be arranged. We'll go down the list state by state in alphabetical order. Each entry will be made with members first name and RCMA number followed by the information. Like so.....

OREGON

LYLE (OR-009) says Oregon State Police Multnomah-Clackamas divisions will be using etc.

Once we've gone through the states, we'll have a question and answer section for any Q & A's members send in.

Alright...here we go!!!

IDAHO

MIKE (ID-001) sent in reams of stuff...this seems to be the most interesting...

FG	Fish and Game SW Idaho	WIR-58	159.390
LG	Boise State Univ.	KTL-508	154.100
LG	Boise Municipal Airport	KWM-713	155.085
Pris	Idaho State Prison	KGK-592	155.760
ROAD	Ada County Highway Dist.		151.130

Public Safety - West (continued)

OREGON

From LYLE (OR-009): Lots 'n lots of us in the Portland-metro area love to listen to fire freqs but not many of us know the fire station locations. I hope this will shed some light...

Portland Fire Department: KOB-647

Engine 21
Rescue 1
Squad 1
Truck 1.....55 SW Ash
Engine 2.....630 SW Gaines
Engine 3 & Truck 3.....1715 NW Johnson
Engine 4 & Truck 2.....511 SW College
Engine 5 & Truck 8.....1505 SW DeWitt
Engine 6 & Boat 2.....3660 NW Front
Engine 7 & Boat 1.....5 SE Madison
Engine 8.....7134 N Maryland Ave.
Engine 9.....900 SE 35th
Engine 10.....5830 SW Kelly
Engine 11.....5707 SE 92nd
Engine 13 & Truck 5.....926 NE Weidler
Engine 14.....1905 NE Killingsworth
Engine 15.....1920 SW Spring
Engine 16.....4465 NW Yeon
Engine 17.....12070 N Jantzen Ave.
Engine 18.....8720 SW 30th
Engine 19 & Truck 6.....7301 E Burnside
Engine 20.....2235 SE Bybee
Engine 22 & Truck 9.....7205 N Alta
Engine 23 & Truck 4.....2915 SE 13th Pl.
Engine 24 & Truck 7.....4515 N Maryland
Engine 25 & Truck 10.....5211 SE Mall
Engine 26.....5247 N Lombard
Engine 27.....11212 NW Saint Helens Rd.
Engine 28.....5540 NE Sandy Blvd.

District 10-Multonomah County

Station 1.....1500 SE 122nd Ave.
Station 2.....13310 SE Foster Rd.
Station 3.....13303 NE San Rafael
Station 4.....18600 NE Halsey
Station 5.....1927 SE 174th Ave.
Station 6.....645 SE 223rd, Gresham
Station 7.....SE 302nd & Dodge Park Blvd.
Station 8.....4835 NE 106th Ave.
Station 13.....5916 NE Going
District 14 (Corbett).....Corbett, Oregon
Gresham Fire.....150 W Powell Blvd., Gresham
District 20 (Skyline).....8031 NW Skyline Blvd.

NEW MEMBERS

AZ- Guy Ferris, 4042 E. Black Lidge Dr., Tucson, AZ 85712
CA-CC-006 James A. Taylor, 621 Bounty Dr., Pittsburg, CA 94565
CA-CC-007 Edward Payne, 2729 18th St., San Pablo, CA 94806
CA-LA-217 Dewey Myers, 329 E. 61st St., Long Beach, CA 90805
CA-LA-218 Dave Carpenter, 3062 Ostrom Ave., Long Beach, CA 90808
CA-LA-219 James, Highland Park, CA 90042
CA-LA-220 Christopher W. Clarke, 5122 Lindley Ave., Encino, CA 91316
CA-LA-221 Gerald W. Sharp, 3106 Eckleson, Lakewood, CA 90712
CA-LA- Marvin Collins, 1607 Del Oro Dr., La Canada, CA 91011
CA-LA- Don Wilson, P.O. Box 54183, Los Angeles, CA 90054
CA-OR-130 Dave Sexton, 1510 W. Flora St., Santa Ana, CA 92704
CA-OR-131 G. David Lowe, 4632 Lakeview Ave., Yorba Linda, CA 92686
CA-OR-132 Keith D. Parke, H&HS FMD 3rd MAW, Marine Corps Air Sta., El Toro, CA 92709

(continued on page 21)

Did you know that Oregon State Police have hand-held radios in use for accident scenes. You'll find them on 154.935 (R). OSP also tells me there is a second hand-held freq but I can't find it. Any suggestions?

Last month the Oregon legislature gave OSP added funds for an airplane to use on those that travel faster than 55. My sources tell me that the Cessna-180 will be airborne beginning November 15th...and in the beginning will use regular division freqs for any given area. Others may be added later. But get a load of this. OSP says they may also pull a chopper out of mothballs for traffic patrol. They've owned it for a number of years

but have never had the bucks to get it in the air.

According to BOB (WA-007) Portland police are using 156.15 as a computer data channel link to some patrol cars.

Bob has also sent along radio, base & apparatus numbers and the fire radio code for Marion County...

Frequency 1 Salem 153.770
Frequency 2 County Fire Defense 154.160
Frequency 3 State Fire Defense 154.280
Frequency 4 Disaster Scene 153.830
Frequency 5 Teletype 154.385

Station	Area	Call	Freqs
100	Salem	KOG-409	#1
	Salem	KTA-983	#2
200	Woodburn	KOK-934	#1 & 2
300	Marion County	KBQ-750	#1, 2, 3 & 5
350	Keizer	KFN-558	#1 & 2
400	Silverton	KCZ-532	#1 & 2
450	Mt. Angel	KFA-438	#1 & 2
500	Sublimity	KFZ-909	#1 & 2
550	Lyons	KRE-246	#2
600	Jefferson	KCL-518	#1 & 2
650	Aumsville	KLK-728	#2
750	St. Paul	KTC-793	#1 & 2
790	Mill City	KTH-534	#2
800	Stayton	KJF-697	#1 & 2
820	Mehama	KJF-699	#2
830	Marion	KJF-698	#2
850	Hubbard	KDU-488	#2
900	Aurora	KEO-347	#1 & 2
950	Turner	KDU-500	#2

Marion County Fire Code

02 First aid car
03 Radio check
31 Call station
44 Send ambulance-emergency
45 Send ambulance-no emergency
50 Responding to alarm
51 Arriving at scene
52 Returning-in service
53 Returning-out of service
54 Drill/inspections
55 Message received
56 Receiving poorly
57 Alarm test
58 Relay message to _____
59 Delay transmission 30 seconds
60 Fire controlled
61 Police assistance (traffic)
62 Police assistance (investigation)
63 Return to quarters
64 Secure at quarters
65 Standing by
66 Move up
67 Away from radio
68 Your location?
69 At radio
70 No serious injury
71 Send food and drink
82 Bomb threat
83 Call media
84 Slow down
85 Civil disturbance
14-14 Riot action
14-14 Send police immediately

While talking on the phone with RICHARD (OR-006) he suggested including the Portland Emmanual Hospital Life Flight freqs...

Base and pager 462.975
Chopper and ground units 467.975

And by the time you receive this copy of the newsletter, the Oregon chapter of RCMA will have had its first meeting. Any interesting details will be included in the December newsletter.

Public Safety - West (continued)

UTAH

MIKE (ID-001) has even more information from Utah...

Brigham Young University	KBV-847	Security PD F-1	154.965
Brigham Young University	KBV-847	PD car to car	154.815
Utah Technical College			155.055
Utah Fish and Game			155.775
University of Utah-Salt Lake City			154.725
University of Utah-Salt Lake City			154.115
School buses-Provo, Utah			158.880
Treatment Plant-Provo, Utah			158.760

WASHINGTON

MARK (WA-004) sends us information on a couple of state freqs...

Washington Department of Natural Resources	159.421
Six state regions	159.225-159.465

That's it for now...till next time...BYE!!!

SOUTHERN CALIFORNIA COUNTIES

NEW COORDINATED FIRE COMMUNICATIONS SYSTEM FOR
Pasadena, Burbank and Glendale Fire Departments

FREQUENCY	CHANNEL	USAGE
153.89 MHz	Red	Dispatch
153.77	Green	Tactical use at fires
154.2035	Blue	Paramedic Dispatch
154.28	White	State Fire Mutual Aid
154.34	Yellow	L.A. Co. Fire "Valley"
153.83	Black	Low Power Fire Tactical
46.10		Tone controls for computers (old PFD Freq 1)
46.20		Pasadena Mutual Aid with South Pasadena FD, etc.

Battalion Chiefs:
1, 10, 100 series indicates Burbank Fire Department
2, 20, 200 series indicates Glendale Fire Department
3, 30, 300 series indicates Pasadena Fire Department

****

NEW RADIO SYSTEM FOR ORANGE COUNTY MARSHAL'S DEPARTMENT-Station 15

Freq 1:	506.8625 MHz.	Unit Numbers
Freq 2:	509.3625	100's indicate Captains
Freq 3:	509.6125	200's indicate Lieutenants
Freq 4:	510.1125	300's thru 500's indicates Deputies

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TIDBITS: TIDBITS: TIDBITS: TIDBITS: TIDBITS: TIDBITS: TIDBITS:

Pasadena Police Department-Occaisionally when an officer clears from a dispatch, he will advise the dispatcher "I.R.O." This stands for "Incident Report Only", and is simply a short half page memo that an officer can file stating that a certain occurance did take place, that it was checked out by a police officer, but that no formal report will be taken.

Montebello Police Department-Scheduled to add 156.15 MHz (Old Long Beach Freq)

FROM WALT (CA-OR-129) Orange County RED Channel Codes

"Alex-A" All Points Bulletin. Participating departments to set up a surveillance of freeway system. (seldom ever works)

"Charlie-Checkmate" RIOT IN PROGRESS-Neighboring agencies send help A.S.A.P.
"OCEAN" (Stn 43); "EAGLE" (Stn 44); "ANGEL" (Stn 26); "HB One" (Stn 42) are all police helicopters.
"Station 10" is the California Highway Patrol

****

FROM JIM (CA-LA-094)

Los Angeles County Sheriff's Department

Lakewood Substation Base: 39.64 MHz. Mobiles: 39.22, not 39.20

UNIT #	AREA OF SERVICE	UNIT #	AREA OF SERVICE
130C	Station Captain	134	Artesia & sometimes Paramount
130D	Station Desk	135	City of Hawaiian Gardens
130L	Station Lieutenant	136	City of Paramount
130S	Station Sergeant	137	Extra unit, usually Paramount
131	City of Cerritos	138	Extra unit
132	City of Lakewood	139R	Reserve Deputy
133	City of Bellflower	SKYNIGHT	Station Helicopter

Sheriff unit numbering system:

Sheriff's patrol units consist of two or three numbers, an optional letter and sometimes another optional number. The first one or two numbers is the station, the second or third number is the area assigned, and the letter is the type of unit. A number may also follow the letters. EXAMPLE:

45 ADAM
4 - Norwalk Station
5 - Assignment
A - Criminal Patrol

133 TOM 2
13 - Lakewood Stn.
3 - Assignment
T - Traffic
2 - Beat # 2

Station administration will be indicated by a number ending in a zero (0), followed by a letter designating rank. If more than one administrator is in the field, the additional units will have numbers in place of the "0".

Station Detectives:

The last two digits indicate the station number

801 thru 825 Adult Detectives Ex. 813 is Lakewood Stn. Detective
601 thru 625 Juvenile Detectives Ex. 605 is Temple Stn. Juvie Det.

Patrol unit letter assignments:

No letter	Criminal Patrol	K	One Man Patrol
A	Criminal Patrol	L	Lieutenant
B	Criminal Patrol	M	Motorcycle
C	Captain	P	Parking Control
D	Desk (when following "0")	R	Reserve Deputy
D	Criminal Patrol, Report	S	Sergeant
E	Criminal Patrol, Explorer	T	Traffic
F	Criminal or Foot Patrol	U	Utility
G	Gang Suppression	X	Extra Unit
I	Inspector	Z	Special Assignment

SPECIAL ENFORCEMENT BUREAU: S.E.B.

240 thru 249 SEB units not assigned to a station
240 MARY SEB Reserve Motorcycle units
240 ROBERT SEB Emergency Services Detail (E.S.D.) Rescue
200 thru 225 SEB units assigned to a station
240 DAVID SEB Headquarters (E.L.A. next to E.L.A. Station)

Public Safety - West (continued)

SHERIFF'S AIRCRAFT: Aero Bureau

Ground units assigned to aero bureau:

950 CHARLIE	Captain	950 DAVID	Aero Bureau Desk at
950 LINCOLN	Lieutenant		Long Beach Airport
950 UNION thru 959U	Support and Utility		

Aircraft Identifiers:

ARGUS	Helicopter assigned to El Monte; Temple; Norwalk; Pico Rivera; East L.A. (Based at E.L.A. Station)
119 ADAM	Helicopter assigned to Antelope Valley.
69 ADAM	Helicopter assigned to Newhall.
109 ADAM	Helicopter assigned to Malibu.
SKYNIGHT	Helicopter owned by City of Lakewood.
AIR 21 thru 24	Hughes 300 - general patrol
AIR 31 thru 34	Bell G3B2 - general patrol
AIR 41 thru 42	Hughes 500 - general patrol
AIR 51 thru 55	Choctaw - general patrol and rescue
AIR 61 thru 63	Fixed wing aircraft - general patrol

Radio Communications: Use dispatch channels; Freq Mary (39.52) & 122.75 AM

From JIM (CA-LA-094)

Long Beach Police Department frequency assignment change:

Chan. 1	Sector 1 - Downtown & West city	460.125
Chan. 2	Sector 2 - East city & Sector 3 - North city:	460.225
Chan. 3	Car to Car & Inquiry	460.350
Chan. 4	Detectives & Special Events	460.450
Chan. 5	Detectives, unit to unit (non repeater)	?

In the near future, Chan. 2 will be assigned to Sector 2 units only with Chan. 3 assigned to Sector 3 units. Chan. 4 will be car to car, info, special events, etc. Chan. 5 will be given to the detectives. The freq is a closely guarded secret and is low power (no repeater). Editor's note: LBPD uses CLEMARS 460.025 at the Grand Prix, etc. Perhaps this is new Chan 5?!

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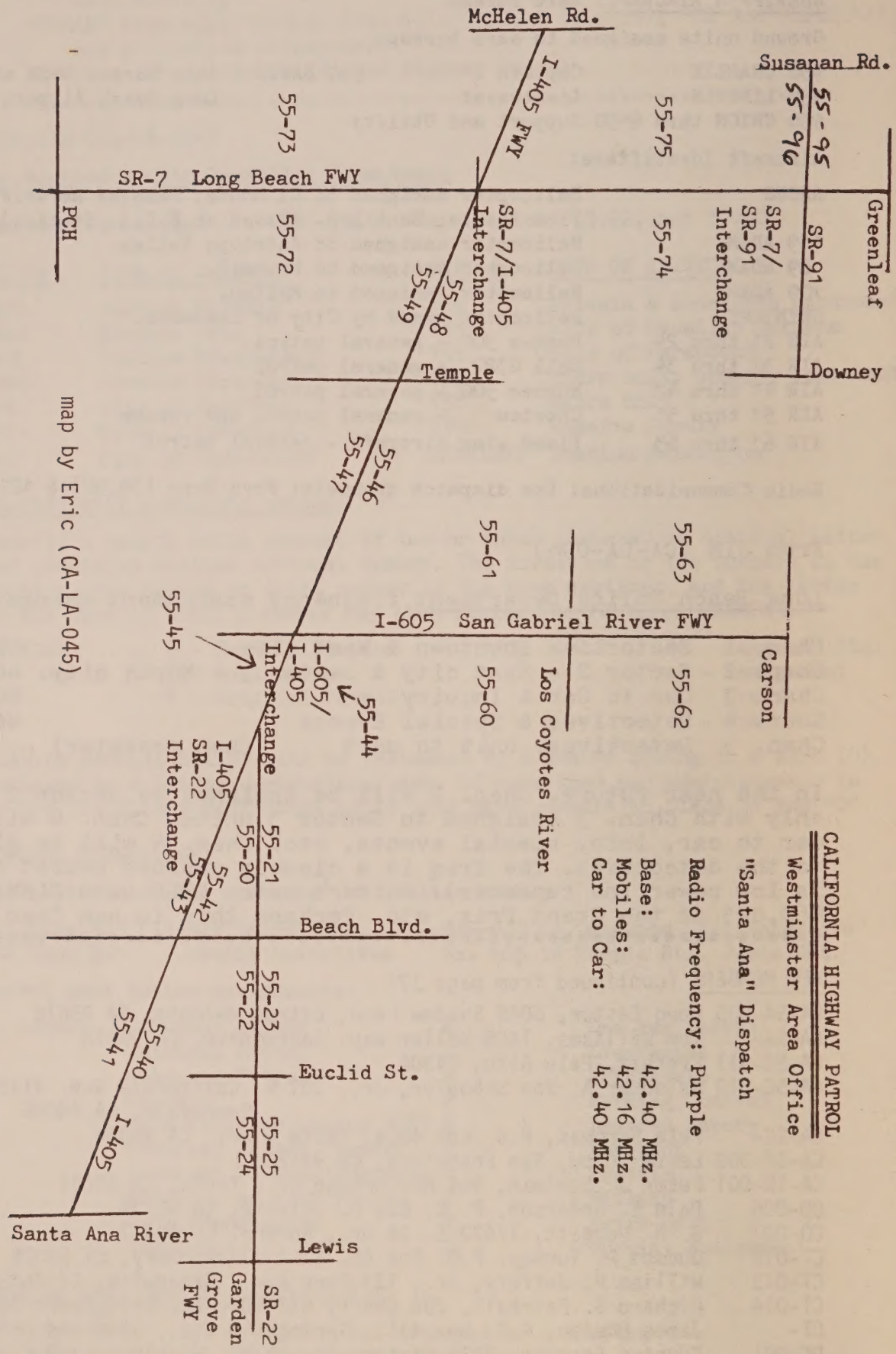
NEW MEMBERS (continued from page 17)

CA-SA-005 Doug Easton, 6046 Shadow Lane, Citrus Heights, CA 95610
CA-SA- Tom Williams, 1405 Weller Way, Sacramento, CA 95818
CA-SC-011 Everett, Palo Alto, 94306
CA-SC-012 Waldemar A. Von Schoeler, Jr., 201 W. California Ave. #1105, Sunnyvale, CA 94086
CA-SC- Pete Narovas, P.O. Box 4824, Santa Clara, CA 95054
CA-SF-009 Lester Chew, San Francisco, CA 94123
CA-SK-001 Peter J. Egelman, 904 Northridge Dr., Yreka, CA 96097
CO-006 Dale E. Anderson, P. O. Box 6, Holyoke, CO 80734
CO-007 G. N. Hoggatt, 17473 E. 16 Dr., Aurora, CO 80011
CT-012 Judson A. Turney, P.O. Box 65, East Glastonbury, CT 06025
CT-013 William P. Jeffery, Jr., 123 Park Ave., Greenwich, CT 06830
CT-014 Richard S. Fairhall, 204 Cherry Hill Dr.-2A, Bridgeport 06606
CT- James Phelan, P.O. Box 4112, Springdale Sta., Stamford 06907
DC-001 Compton Ferrier, 2120 Sixteen St., N.W., Washington, D.C. 20009
FL-024 Mark A. Cobbledick, 5001 SW 73 Terrace, Miami, FL 33143
FL-025 Kenneth Roberts, 5317 N.E. 4th Ave., Fort Lauderdale, FL 33334
FL- Frank L. Martinoli, 3603 E. Renellie Circle, Tampa, FL 33609

(continued on page 38)



CALIFORNIA HIGHWAY PATROL

Westminster Area Office

"Santa Ana" Dispatch

Radio Frequency: Purple

Base: 42.40 MHz.
Mobiles: 42.16 MHz.
Car to Car: 42.40 MHz.

Business, Etc.

Chuck Gysi, Editor

This column is for reporting frequency and radio system information for the following varied services: business, forest products, petroleum industry, special industrial, manufacturers, news media (behind-the-scenes radio, TV & newspaper), motion picture industry, security (private patrol, detective agencies, campus security & police, amusement park & stadium security, shopping center & mall security, plant/business/ hotel security, etc.), General Mobile Radio Service (GMRS), mobile phone/RCC & paging, trucking firms, bus lines, taxi cabs, tow trucks, utility companies (private & municipal water, power, electric, gas, telephone, etc.), and all school & college related frequencies. Send information and questions pertaining to the radio services covered in this column to: Chuck Gysi, P.O. Box 216, Willow Grove, PA 19090.

Welcome to our new column that will cover a variety of radio services that don't seem to fit in elsewhere. I am the former mid-Atlantic Frequencies and Radio Systems editor, which has been replaced by several new columns. For those that want to know who the heck I am, check the F&RS in the August 1979 column.

This column will cover more than a dozen different radio services. These services are mainly within the Industrial and Land Transportation radio services under FCC regulations. I'd like to explain the column headings I'll be using and clarify what services go under each category. It won't be necessary for you to separate them at this time, but it will make reading the column easier. The list includes:

- BUSINESS--business band, forest products, petroleum industry, special industrial and manufacturers.
- NEWS MEDIA--TV and radio remote broadcast pickup, relay press (newspapers) and motion picture industry (FILM).
- SECURITY--This is an all-encompassing category. Includes security and detective agencies, private school and college security, amusement park and stadium security, shopping center and mall security including department stores, hospital security, and security forces for any business (most large business have their own security forces).
- GMRS--General Mobile Radio Service. Includes organizations and other groups utilizing GMRS repeaters, equipment. Do not send info on private individuals utilizing GMRS, as they deserve a right to privacy and identification.
- MOBILE PHONE/RCC--mobile telephone and radio common carrier mobile phone service and paging. In most urban areas, most mobile phone/RCC channels are in full usage. In smaller towns and rural areas, as few as only one channel may be in use. Information along those lines would be desirable, in addition to repeater locations in urban areas for mobile phone.
- MOTOR CARRIER--trucking firms, bus lines, taxi cabs, and tow trucks (automptive emergency).
- UTILITY--telephone maintenance and power (water, gas, and electric companies).

Any suggestions on the above sub-headings are welcomed.

It would be appreciated and more meaningful if those sending in business-band frequency information would include unit numbers in use by the licensee. High band business licensees usually have each their own numbering systems, from initials of the firm to combinations of letters and numbers to numbers only. On UHF repeater systems operating regionally, it is imperative to know the unit numbers of a particular business in order to pull them out of several and many users on the repeater. The standard system for

UHF repeaters is assigning a block of 100 unit numbers to each user. First assigned numbers range from 100-199, next 200-299, etc. This system can go all the way up to 9900 (I hope no repeater is that crowded), with most going to around 3000 for a busy system. The base station usually takes the first number (100, 200, etc.) in the series.

Business

The 800-MHz business band is growing. I will attempt to discuss this topic when possible because of growing interest in the band. Briefly, for the uninitiated, channels are paired as in the present UHF bands, but there is a 45-MHz separation between paired channels. 806-821 MHz are repeater input frequencies and 851-866 are output repeater frequencies. While in Los Angeles area recently, I noticed several 800-MHz antennas. Also, I've started noticing several of these three-inch antennas on trucks in the Philadelphia area. One big user seems to be Federal Express. Formerly operating on 502.1375 MHz in Philadelphia, all their trucks are now sporting 800-MHz antennas. A check of FCC files shows Federal Express's Philadelphia repeater operating on 851.9625 MHz, call KXN-429. FCC files only show three other 800-MHz channels licensed in Philadelphia, one a repeater with eight licensees. This list was as of March, 1979. I suspect there have been several new licensees since then. Files also show abundant 800-MHz activity in Los Angeles area, Metro New York, Chicago area and Houston. Maybe we'll have equipment on this band in a year.

From BILL (PA-015):

461.050 Lawrence Cablevision New Castle, PA
462.075 Armstrong Utilities Cable TV Ellwood City, PA

Here's a project someone may want to undertake if it hasn't already been done. There are a lot of business frequencies in use at Los Angeles International Airport. These include the trams used by hotels and motels and trams used by the car rental agencies. One of the car rental firms (National, if I remember right) is using 800 MHz. Also of interest would be limosine and taxi services. If you have info on these business frequencies in use at LAX, forward them for use in the column.

News Media/Film

From TONY (NJ-005)

455.3875 New Jersey Nightly News (NJ Public TV)
450.650 WBRW-AM Somerville, NJ
(Editor's note: Question of Channel 13 (WNET-TV) Newark, NJ news freq was raised in Tony's list for NY metro news in Sept. newsletter. Apparently he found their freq. 455.3875 is used by NJ Public TV's news show, New Jersey Nightly News crews. Apparently they have a base in each city there is a TV station. I have heard bases in Camden (Ch. 23 WNJS), and Trenton (Ch. 52 WNJT). The network also has stations in New Brunswick (Ch. 58 WNJB), Montclair (Ch. 50 WNJM) and Newark (Ch. 13 WNET). I guess there are bases in each of those cities, too.)

Business, Etc. (continued)

From CHUCK (PA-005):

Heard traffic helicopter on 161.700. Was giving road conditions for area north of New York City (New Rochelle) and into Connecticut (Stamford, Norwalk and Bridgeport). Anybody able to ID the radio station?

From BILL (AR-001):
Bill reports that he is licensed on 154.54 MHz in the business band for his parttime job as news photographer for a Little Rock paper.

Security

From CHUCK (MD-004):

154.570	Security Square Mall security	Baltimore County, MD
464.825	Landover Mall security	Prince Georges County, MD

From JIM (CA-LA-094): all security forces in CA

464.525	KUP 644	R	Los Cerritos Mall, Los Cerritos
461.375	KEA 654	R	Hawthorne Plaza, Hawthorne
154.515	KZN 769	BM	Marina Pacifica Village, Long Beach F-1
154.515		BM	Westminster Mall, Westminster
464.975		R	Puente Hills Mall, Industry
461.375		R	West Covina Fashion Plaza, West Covina
508.2125		R	Mission Viejo Co., Mission Viejo
461.375		R	Oaks Mall, Thousand Oaks
154.600	various	M	JCPenney stores, throughout area, F-1
463.750		R	Shaw Security Co., Long Beach, F-1
464.775		BM	Fox Hills Mall, Culver City
151.175		BM	Marina Pacifica Condo, Long Beach, F-1

(Editor's note: 151.175 freq listed above doesn't seem right. That freq is a forestry channel. Perhaps the correct freq for Marina Pacifica Condo is 151.775. Can anyone verify? Really great list of mall freqs!)

From CHUCK (PA-005):
Anyone know of frequencies used by the Gallery mall security in center city Philadelphia? How about security frequency for newly opened Fairmont Hotel also in center city Philly? Gallery freq is UHF I believe.

GMRS

REACT seems to be using 462.675 MHz for repeaters across the nation. Many groups in metropolitan areas have set up on this channel pair (467.675 input).

Several townwatch groups are using the General Mobile band in the Philadelphia area for patrolling their neighborhoods. Next month (if I don't forget), I'll list a few groups that are.

Mobile Phone/RCC

There is an article on mobile telephones in the September 1979 issue of Motor Trend magazine. It details expected costs from telephone companies and RCC firms and describes equipment available. Article mentions California will convert to direct-dial system in December. That means numbers will have to be assigned to those presently with mobile phones and that waiting lists will start to form for numbers for those wanting equipment. Areas such as New York in the east, (already with direct dial) have five-year waiting lists.

From BILL (PA-015):

152.630 Bell Telephone mobile phone New Castle, PA

Motor Carrier

The Southeastern Pennsylvania Transportation Authority (SEPTA) is expected to start installing two-way radios in its buses within the next year, according to reports. The agency has been authorized 14 frequencies in the 502 MHz range in the motor carrier radio service. More info on this system in the Philadelphia area when it becomes available.

Utility

From DON (MD-007):

37.64 KAP 390 Conowingo Electric Co. Elkton, MD
37.64 KGC 743 Conowingo Electric Co. Bayview, MD
37.78 KGC 743 Conowingo Electric Co. Bayview, MD

From BILL (PA-015):

47.78 Penn Power BM New Castle, PA

From TOM (PA-003):

48.46 Penelec Erie, PA

From TONY (NJ-005):

153.455 Jersey Central Power and Light nuclear plant
Oyster Creek, NJ
(Editor's note: With all the problems at nuclear plants lately, i.e. Three Mile Island the one at Red Wing, Minn., recently, it might be interesting to listen in on these frequencies. If you know of frequencies for nuclear plants, please forward them to this column.)

Business, Etc. (continued)

You may say that this month's column only touched on frequencies in Pennsylvania, New Jersey, Maryland and California. That's because they are mainly leftovers from when I did the regional column. This column is a nationwide column and is intended for members anywhere in the country. With your input and contributions in lists, this column will be a success. Send any frequencies and codes, etc. used in any of the categories of this column to me and I'll try to make this column as interesting as possible for everyone.

CONTACT

A column devoted exclusively to the purpose of helping members contact other members. If you want to meet, telephone, or correspond with other members (by letter or cassette tape) in a certain geographic area or with other members who have similar listening interests, this is the place to say so. Interested members will contact you directly so be sure to give your telephone number and best time to call and/or your address. If you are seeking specific frequencies or radio system info, please write to the editor of the appropriate column. Write to: RCMA, P.O. Box 4693, Riverside, CA 92514.

I would like to hear from members in New England, especially Massachusetts. ED SOOMRE (MA-017), One Alcott Dr., Northboro, MA 01532.

I would like to collect tape recordings of typical police and fire activities in various parts of the country. I will either duplicate the tape and return the original or exchange it for a tape of typical activities in the Boston metropolitan area. Cassettes preferred, reel-to-reel OK. BOB COATE, (MA-011), 23 Leicester Rd., Belmont, MA 02178.

I am very interested in contacting other RCMA members in the Southwest Connecticut area and also any members who, like me, are railroad buffs. PATRICK F. JEFFERY, 123 Park Ave., Greenwich, CT 06830.

I would like to receive cassette tape recordings of police and fire dispatches from New York, Denver, St. Louis, Chicago, Detroit, Houston, Seattle, Atlanta, Philadelphia, Washington, Boston, Cleveland and any other large city. Please indicate which frequencies have been put on tape. DAN REESE (CA-ME-006), 736 Penny Royal Ln., San Rafael, CA 94903.
(Editor's note: Since cassette tapes cost money, it might be a good idea to contact Dan first to see if he will supply the tapes or pay for tapes.)

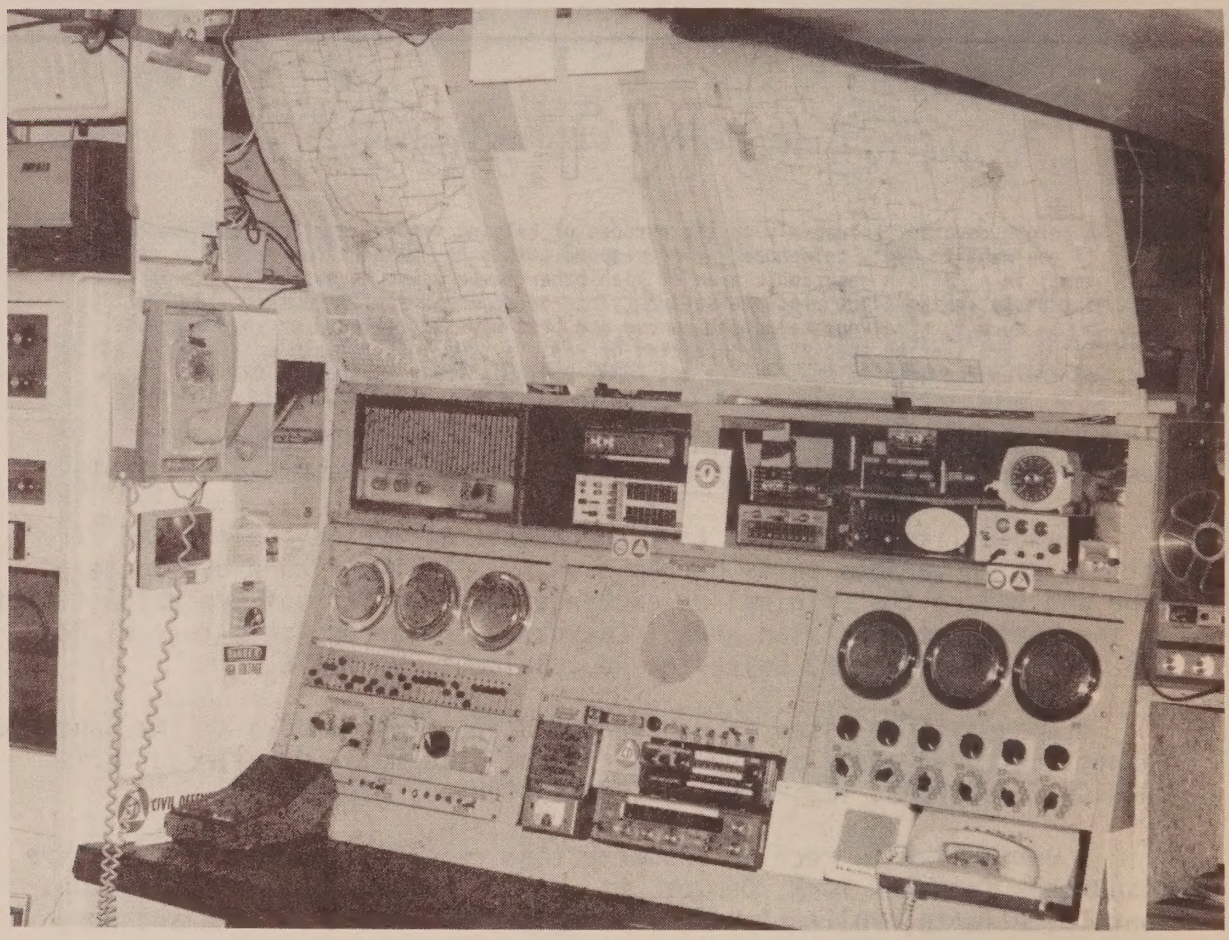
I'm interested in frequency and system information on East Bay (Northern California) radio users. My primary interests are law enforcement, fire, and ambulance/medical emergency, but information on any radio system users (including business band) will assist me. I would like to compile a frequency list of everyone using radio systems (professional type) in the Hayward area especially, but this may be more ambitious than I can handle. Since I've moved to the East Bay recently, much of my information on East Bay may be outdated. Call any time Monday, Tuesday, or Wednesday, or late morning-early afternoon other days. PAUL DE LIBAN, 782-9532, or write 980-41 Cheryl Ann Circle, Hayward, CA 94544. Thanks.

DEWEY, a new member, would like to communicate with other members in his area. (213)-637-9988, Long Beach, CA.

photo department

Editor: Mike Redman, P.O. Box 1177, St. Charles, MO 63301

Send photographs of custom monitor listening posts, unusual or extensive monitor or two-way antenna systems, user station consoles (PD, Fire, Paramedics, etc.) or other monitor/two-way related equipment of interest. Photographs must be 3 x 5 inches or larger, black-and-white with good contrast, sharply focused and attractively composed. Each photo must be accompanied by details and explanations of equipment. Photos will not be returned. If you have questions, write first and please include an SASE.



Greetings. We're introducing this new Photo Column this month to acquaint our readers with RCMA members' monitoring systems with actual photographs that you will be submitting. Each month we'll be printing a photo of someone's radio installation, but before you run to the mailbox with that photo of yours, here are a few guidelines. Photographs must be sharp, black and white, and the larger the better. Photos that are large can be reduced to the specific size needed for printing. I don't believe small photos can be enlarged. Each picture must be accompanied with a description of the equipment, building techniques, unusual features, or anything that might be of interest to our readers. Unfortunately, photos cannot be returned, and it may take a few months for your station to appear. We're looking primarily for shots of our members' installations, but if have photos of Public Safety Communications Centers, Air Traffic Control Stations, or any other non-federal radio facility, send it in! And be sure to note the camera, film type, and photographer's name.

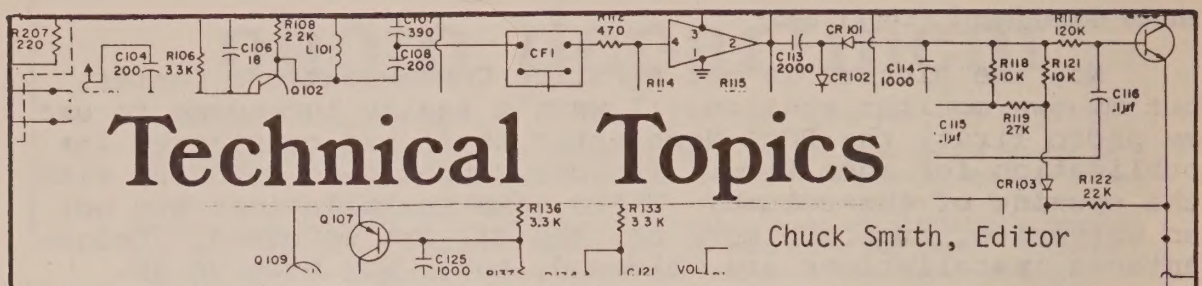
photo department (continued)

No, the picture is not a Police Communications Center, but my own monitor station. I wasn't really intending to use my photo first; the RCMA Newsletter staff had considered its publication for some time. It just happened to coincide with the opening of the column. While some installations are not so extensive, some are more so, and all are welcomed. Unique antenna installations are welcomed, too! So, here we go.

To describe the photo, I'll start at the top. Mounted above the console are maps of Missouri and Southwestern Illinois. Beneath them are the bank of monitors, identified from left: Magnavox AM/FM radio, Realistic Pro 77, Regency models ACTE 16 H/L/U, ACTR 10 H/L/U, TMR 12H, TMR 1W, and a Bearcat III. The 12 volt power supply powers the TMR 1W, and the timer eliminates activation on weekly tests of the Weather Service on 162.550 Mhz. Across the top of the console unit are six car-stereo type speakers, with a dual voice coil speaker in the center. The left panel features 30 4-position lever switches to control household speakers in Intercom, Off, Channel A, or Channel B modes. Beneath that are VU meters for Channels A and B, and two rotary selector switches to feed audio to the recorder, from a selected radio. At the bottom is the control circuit for the speaker selector intercom feature. The intercom is in front of this panel. Beneath the center speaker is the control panel for the TMR 1W audio, which allows the tone-activated weather broadcasts to be heard, and reset, from the entire residence. Beneath that are monitor and VU for the recorder line, and Realistic models Pro 9 and Pro 2. At the center of the right panel are the controls to determine which radio feeds audio to any or all of the six panel mounted speakers.

To the left of the console is a rack assembly, with a Motorola model LO3FNB monitor on top, 2 Precision 35 watt and 100 watt amplifiers beneath (Channels A and B), a Shure model 545S Mixer, and a Teletalk intercom. Audio from the ACT 16, ACT 10, and Bearcat III is fed into the Channel A amplifier; audio from the AM/FM radio is fed into channel B. Each house speaker can receive program material from either source, be turned off, or act as intercom. At the right of the console is stereo equipment and recording equipment; partially shown is a Viking/Knight KG415 deck. The console is fed by 8 garage and roof mounted antennae. I would be pleased to hear from anyone with comments or improvements to this system.

Well, that's it for this month. Now it's your turn to photograph that system of yours, have the photo enlarged a little, write a page or so on what it does and how it works, and send it on in to me. Photographs should be mailed in a large envelope, with a piece of cardboard on each side. The envelope should be clearly marked, "Photographs, Do Not Bend, Hand Stamp Only". My postal box is somewhat small, and this will keep the postal staff from folding them to get them in. I'll acknowledge each photo with a post card, so you'll know I received it. It would probably be better for you to take your photos direct to a post office to make sure postage is sufficient, and insure it doesn't sit in a hot mailbox! So get to work, and get those pictures in the mail!



Technical Topics

Chuck Smith, Editor

Send all equipment reviews, technical articles, technical tips and questions on such subjects as receivers, antennas, preamps, accessory equipment, repeaters, links, tones, scramblers, non-voice data transmissions or even computer applications for monitoring to: Chuck Smith, 4901 Heil Ave., #3C, Huntington Beach, CA 92649.

Well, as Iden indicated briefly in his introduction to last month's Technical Topics column, circumstances in my personal affairs have gone through some degree of metamorphasis, at least to the extent that I can confidently re-assume the responsibility for editing this column on a regular basis. For the past several months, I have had several different projects constantly competing for the lion's share of my attention, and since I have never enjoyed the reputation for being the world's best organized person, it didn't take long for me to reach the point where I was getting absolutely nothing accomplished at all! During this time I failed to stay in communication with Iden, which contributed to his bewilderment and confusion, and for which I must apologize. Since at times at its best it is difficult for me to just put this one column together, I can imagine what a logistical nightmare it must be to integrate all of the various editorial contributions into a finished Newsletter of the calibre that we have been consistently publishing. My hat is certainly off to you, Iden!

So, after a little bit of soul-searching and some last minute shuffling of priorities, I made the decision to change my employment. This one decision, while not an easy one to make, did take an immediate burden from my mind, and allow me to think a little bit more objectively about this whole affair. Since that time, a few of my other projects have begun to bear a little fruit, allowing me more and more time to devote back into the pursuit of my various hobbies, such as monitoring. Writing this column, despite my difficulties with it on occasion, is a job that I truly relish, and would not have wanted to surrender without good reason. To those of you who have missed my column in the August and September issues, thank you for your patience, and those of you that didn't miss it at all probably won't even notice that it's back, ha ha!

In an attempt to better serve the membership, and, of course, make things easier for myself, I have gone out and bought my own typewriter. This, I hope, will allow me more time during the month to grind out this stuff, instead of having to do it at work all the time. I have also put a phone answering machine on my telephone line so that I won't have to miss any of those so-called "important" telephone calls. This machine is on the line whenever I am unavailable for personal contact, and can be used, if you wish, to leave messages or questions for me. In the case of local members, this is much easier than writing a letter, and I can guarantee that at the very least I will get the message. I have done this because I am not always the easiest person to catch at home, but I don't want to miss any of your questions or suggestions. As always, feel free to call with your input, but if you don't find me at home and instead get the answering machine, I would like to ask that you at least leave your name and number so that I can get back to you. Don't just be shy and hang up, because then all I'll get is a short recording of a dial tone, and I'll never know if it was a call with a question or just another wrong number.

TECHNICAL TOPICS (Cont.)

Before I continue with the business at hand, I would like briefly to go back over something that I mentioned several columns ago. Specifically, I would like to reiterate that it is virtually impossible for me to answer any questions personally by return mail, and therefore I am not soliciting the sending of self-addressed, stamped envelopes to me with your contributions. I hope, and it is my genuine intent, to answer all questions here within the cofines of this column, and any that I cannot arrange to handle will be sent on to the person most qualified to do so. I am going through this again because I don't want any hard feelings among those of you who have sent SASE's; I don't want anyone to think that I'm in the business of collecting your stamps!!

SOAP BOX DEPARTMENT

As is my usual habit when beginning my column, I usually get up on my soapbox and expound on some subject relative to the monitoring hobby, and this month is no exception to the rule. This month, however, the speech will be a little shorter than usual, but I feel important just the same.

Over the past couple of months, the mail that I've received has roughly been grouped into one of several different categories. One of these categories has been that of inquiring about the availability of new products and equipment, and of these inquiries, one of the most frequent has been about the availability and use of descramblers. Before I undertake to discuss this subject, I think that everyone reading this column should be aware of the fact that the only reason that scramblers exist at all is to protect the users of certain "sensitive" radio systems from the prying ears of nefarious listeners. Now, to be certain, the proliferation of sophisticated scanning monitor receivers has in itself scared the living hell out of such agencies as law enforcement, etc., but after all, the real enemies in this war are the listeners, you and I alike. The briefing rooms at fire and police departments all over the country abound with horror stories in which citizens equipped with scanners have shown up uninvited at the scene of emergencies, sometimes with disastrous results. I think that we're probably all pretty much aware of the trouble that unwanted involvement can bring us personally, but I wonder if we really stop to think about all of the innocent persons who are actually the victims by proxy of this type of thoughtlessness? Scanners are being viewed as a real threat, and the people who use them are rapidly becoming stereotyped as kooks and crazies, and unless something positive is done to overcome all of this terrible publicity, pretty soon the state of the art in scramblers will have progressed to the point where you won't even be able to listen to the newspaper delivery truck! Clubs such as SCAN and the RCMA have done a lot to offset this bad taste in the mouth that the public safety community has about scanner listeners, but the strongest blow of all can be struck by each and every one of you. By being mature and responsible in the enjoyment of your hobby, you can ensure the continuation of your right to listen in the future. I know I must sound repetitious, but I feel that no discussion of scramblers can take place without such a preface.

SCRAMBLERS EXPOSED!!

Scramblers, as presently implemented by those agencies who use them, usually take one of three basic forms: audio inversion, base-band translation, and digital encryption. These have been listed in their order of complexity, and I will discuss each separately.

Audio inversion is the simplest method of scrambling the human voice, and is the most often found type of 'de-scrambler' being sold by various mail order companies and the like. In using the technique of audio inver-

sion, we simply take the high audio frequencies in the input signal and turn them into low frequencies, and vice versa. This will result in the voice sounding like Donald Duck, and as a result being very difficult if not impossible to understand. This inversion is accomplished by mixing the voice signal with a higher audio frequency, say around 3000 hertz. The output of such a mixer would yield us the sum product, difference product, and the two original signals as well. Now if we were to place a filter at the output of this mixer and tune it so that we selected and passed only the difference product, we will have achieved audio inversion. This means simply that as the frequency of the input signal increases, the frequency of the output signal will decrease. This method of scrambling is quick, cheap, and for most purposes, quite effective. In order to descramble this type of signal, we simply go through the very same mixer a second time and thus achieve the reverse of the first process; by reinverting the already inverted signal we will in effect recover the audio as it was originally transmitted. In practical application, however, the actual mixing frequency may not be precisely known; this is why most descramblers working on this principle provide the user with a "tuning" control, with which he can vary the frequency of the injected audio signal until the recovered audio sounds natural once again. To those of you familiar with the process, this is precisely what you are doing when you tune in a single-sideband radio station on the HF bands.

The next type of scrambling that I would like to discuss is not as frequently used in the public service bands for reasons of bandwidth limitations, and that is the method of base-band translation. This type of encryption takes the audio signal and converts it upward to another band of frequencies without destroying the relationship between the actual frequencies within the signal. Referring to the previous example about audio inversion, for instance, if we instead select the sum product from our mixer, we would have achieved base-band translation. If the input signal were a voice with frequencies extending from 100 to 3000 hertz, it would have been translated upward such that the frequencies making up the voice signal started at 3100 hertz and extended upwards to 6000 hertz. The resulting shift in pitch would make the signal very difficult to understand. The drawback to this type of scrambling is that the new signal would now require a greater signal bandwidth to transmit it over the radio waves, and in most cases this would violate FCC regulations pertaining to maximum bandwidth of emissions. However, at higher frequencies where the larger bandwidth would be permissable, this type of encoding would be a viable method.

To descramble a signal which has been encoded using base-band translation techniques, it is necessary to pass it through a mixer which uses the same injected audio frequency (in this case 3000 hertz) but instead we would select the opposite, or difference product. This would cause the signal to be converted back down by the proper amount and once again would be understandable. If this also sounds familiar, it is exactly the same process used to translate, or heterodyne, high frequencies down to lower ones in radio equipment. In other words, the local oscillator in your scanner is actually performing this same process on the signals which are gathered by your antenna.

The last form of scrambling that I would like to discuss is one that presents the greatest threat to your ability to listen, and that is digital encryption, also referred to as digital voice protection. When using this form of scrambling, the input audio signal is first converted to a digital word by a device known as an analog-to-digital converter, or ADC. This digital word is a binary representation of the voice signal, just like the digital signals which are manipulated by modern computers. Once in this form, the signal may be subjected to any manner of encoding algorithms, and

then translated back to an analog form by a digital-to-analog converter, or DAC. The audio signal will now bear absolutely no resemblance to the input signal, and can be transmitted safely over the radio with very little fear of interception, for to be able to decode this type of signal, you must know exactly how it was encoded in the first place, and with many millions of patterns to choose from, you'd better bring your lunch if you plan on sitting down and cracking the code! In addition, this type of encoding makes it quite easy for the code to be changed at any time, leaving all those who had managed to intercept some transmissions out in the cold again. Naturally, there is a disadvantage to this type of scrambling, and that is price. Typical unit costs for digital voice protection runs higher than $1,000, making it impractical for all but the most sensitive of radio circuits. However, as electronics technology advances, the cost of these systems is bound to decrease until it will perhaps be within the budget of almost any municipal police or fire department. Whether or not such systems find wide acceptance depends largely upon the listeners, as I mentioned previously.

Another type of secure communications link not usually thought of as "scrambling" in the strictest sense of the word, but effective nonetheless, is the approach of data communications direct, such as the teleprinter. While the information being transmitted has not been altered in content, the format has been changed to a form requiring special equipment, such as a computer, in order to receive it. In this way, the communication is protected from the vast majority of the common listeners, and since criminals are obviously not too smart in the first place, this would certainly exclude them.

SCANNING SPEED TOO SLOW?

Has anyone found a way to speed up the scan rate of the BC-250, BC-220, and BC-211 receivers? The present scan rate on fast speed is too slow for my liking.

GLENN (NJ-008)

Well Glenn, before I answer this question in detail let's first be absolutely sure that you want to go through with this. There is going to be a practical limit to the maximum speed that is usable with a scanning receiver, particularly one of this type which employs a frequency synthesizer to generate the local oscillator frequency. The reason for this is the time required for the voltage-controlled oscillator (VCO) to null out the phase difference between its signal and that from the reference oscillator used to index the frequency increments. There is a low-pass filter placed in this feedback loop in order to minimize the number of spurious products produced by the synthesizer, and the narrower the bandwidth of this filter, the slower the VCO will be to respond. In addition, there will be some delay involved for the receiver itself to acquire the signal, open the squelch circuit, and inhibit further scanning. While the time involved is rather small, and usually negligible, it can become significant when scanning at very rapid rates. Carrying the speed issue too far will result in no signal reception at all, so experiment with scanning rate to see which rate works best for you, and remember that the time it takes for the synthesizer to achieve phase lock will vary according to how far it must shift; in other words, it will take longer to lock when moving from high end of UHF band to low end of low-VHF band.

OK, now on to the answer to the question. Unfortunately, changing the rate of scan in a programmable receiver is not quite as simple as it used to be to alter the scan rate on crystal-controlled radios, since there is much more involved. The scan pulse, for example, must control a

multitude of functions, such as reading or writing from memory, and the loading of a new frequency control word into the synthesizer. It can be done, however, if you are determined to do so. There will be an IC chip, custom made for Bearcat (or otherwise disguised), which you will find on the schematic interfaced to the keyboard unit. It will in all probability also be interfaced in some manner to the display itself. This chip is responsible for timing the multiplexing of the digital display and interrogating the keyboard for possible entries. There is a line from this chip which goes from here to the synthesizer; there it is responsible for the scanning action by sequentially loading new frequencies into the synthesizer from the memory. Normally, this line is controlled by the internal logic action of the microprocessor and therefore the frequency is not a user adjustable function. However, by interrupting this line and connecting a counter circuit of your own, you can control this rate. Prior to doing the work, check the level of the signals at this point; if they are swinging between ground and +5 volts, the circuit is TTL (transistor-transistor logic) and if the signal is swinging between ground and +12 volts, it is being driven by CMOS circuitry. Whichever it is, the circuit you design to interface to it must deliver the same levels. You may use an integrated circuit timer, such as the NE555, which will work on any supply voltage up to about 24 volts, and simply power it from the appropriate voltage supply. Connect it up as an astable multivibrator (consult the data sheet of the NE555 for suggested circuits) and drive the scanning section of the frequency synthesizer with its output. In this way you can adjust the scanning rate to your own personal taste, within the limitations that I mentioned previously.

DID WE BYTE OFF MORE THAN WE CAN CHEW?

BOB (NC-006) writes and says: "It might be to our advantage to suggest via the bulletin selecting some standard computer format for freqency filing. Many hobbyists now use the Radio Shack TRS-80, and the Level II Basic language is universal for such frequency listing programs."

This question, beyond the obvious suggestion for standardization that it contains, makes me think back on some computer work that I did a long time ago relative to filing away frequency information. I think it goes without saying that the hobby boon in both micro and minicomputer systems has made this type of technology very attractive to the average enthusiast, rather than just the rabid computer "freak". Frequency files and the programs to list them in a usable form are just what the doctor ordered here, but for maximum usefulness the whole thing has to be done right from start to finish. Bryan Hunnell, a local member whose RCMA number eludes me at the moment, has been given the green light by club management to begin the compilation of frequency and service information on a large mainframe computer system which is available to him on a limited basis, but since one of the advantages to having information such as this stored in a computer system is the immediate availability of the data, this will be of very limited usefulness to the RCMA member at large, except simply to have the necessary information at hand. Ideally, it should be possible for every member with a microcomputer to have some sort of frequency sorting program available.

My own program, written in Basic on a Commodore PET computer, can store frequency and service data for about 300 entries in 8K of memory. The drawbacks are twofold: first, when sorting the data, the response time is too slow for my taste, and second, with only 8K of memory available, I must reload the program each time I want to examine a different block of 300 frequencies, which is ridiculous. I feel that any sorting program of this type worth its salt must be written and executed on a disk-based

computer system, for that is the only type of system which will allow the random access to files that is necessary for rapid sorting of data. I have been working in conjunction with a colleague on a program, also written in Basic, but for the Apple II computer, that does a much better job, but still suffers to some degree from slowness. What would solve the problem would be a disk-based system program, written in assembly language, that would do the job without resorting to the slow processing speed of the Basic interpreter. While working on this one myself, I propose that any of you RCMA members who also happen to be handy with a computer tackle this one as well. I would be glad to exchange information (but not the entire listing) with anyone who is genuinely interested, and perhaps in the long run I can develop a frequency sorting program that can be distributed to those in the club who have the ability to implement it.

YOU'VE GOT AM IN MY FM DEPARTMENT

JAMES (CA-ST-001) wrote me a letter which asked, in part: "I found your article on using the I.F. frequency of the scanner to pick up frequencies below your band coverage to be quite helpful; however, I thought scanners on FM could not pick up transmissions on AM, such as aircraft. However, by using the I.F. frequency I can pick up some aircraft communications on my BC-250, these being in the 124 to 125 MHz range."

I thought this was a particularly thought-provoking question because it highlights the basic differences between AM and FM transmissions. Under absolute circumstances, and in theory, an FM receiver is not supposed to detect signals using amplitude modulation. However, as most receivers are not perfect, they will indeed detect the signal, but with much degraded performance. The FM detector (also known as a discriminator) is adjusted such that the audio output of the detector is proportional to the amount of frequency change, or deviation, on the input signal. In order to assure that the discriminator will function only on frequency-modulated signals, and thus give the static-free type of reception that FM is supposed to deliver, the discriminator is preceded by an amplifier and a limiter. The limiter is supposed to smooth out, or clip off all of the amplitude variations in the signal before it gets to the discriminator, but if the input signal is not strong enough to saturate the limiter and cause it to clip off all of the amplitude variations, some of these may creep through and be detected. Add to this that the AM process will often result in a very small amount of frequency shifting with modulation, which the discriminator will sense. The amount of audio recovered, however, will be much less than that obtained from a proper FM signal, and this is why they are usually much lower in level.

Similar effects take place in the reverse direction, and we often find ourselves able to listen to FM transmissions using a receiver made for AM reception. By tuning slightly off to the side of the signal, we recover the signal through what is referred to as "slope detection", in which the IF selectivity of the receiver is used to transform changes in frequency into changes in amplitude. This will work quite well with the narrow-band FM transmissions we are all familiar with through our hobby, but the conventional wideband FM signals contain audio signals which lie outside of the IF passband of the average AM receiver, and the resultant clipping results in lots of distortion. I hope this brief discussion was of interest to some of you.

Perhaps in the near future I can arrange to write full length articles on other such subjects having general interest. I would appreciate it if you would write or call me with your ideas and suggestions for these tutorial articles.

TECHNICAL TOPICS (Cont.)

POLLING THE BC-220:CRITICAL OPINION

Now that the Bearcat 220 has been on the market for a few months and a goodly number of units have found their way into the hands of customers, I am beginning to get some correspondence about initial impressions, likes, dislikes, problems, etc. Following is a potpourri of some of these contributions:

From MIKE (CA-RI-011): "I just wanted to give you a brief rundown, for what it may be worth, on my experience with Bearcat's new BC-220.

I bought my first one on a Friday morning. By Saturday afternoon I had that sinking feeling that all customers get when they realize they had just paid a lot of money for something that doesn't work right. "ERROR" displays were popping up erratically. Zeroing in on the problem, I noticed that after the unit had been on for a while, most attempts at reprogramming on some channels would cause other channels to dump into "ERROR". Example: Reprogramming any combination of channels would cause "ERROR" to display on channels 1 and 2. Reprogramming those channels would cause the same message on other channels. It got to the point where I could not get all 20 channels to uniformly show programmed frequencies--"ERROR" would always end up showing someplace. After playing with this for a while, I noted that the problem would get worse as the unit would heat up--and it did get HOT!! Aiming a fan at it or running the air conditioner seemed to alleviate the problem. I called the store (name witheld by Editor) and was offered an exchange unit, which I accepted.

The second unit has thus far operated well (4 weeks) with the following notations which I assume are typical of the 220:

1. Volume is inadequate for mobile or outdoor use. Driving on the freeway with my window down, full volume is required to hear what is being said.

2. Squelch--also inadequate. I grew up with radios that had squelch controls that would cut out <u>any</u> signal, no matter how strong. I noticed with the 220 and my other scanner-a Regency Touch-that I can't even squelch out some intermod interference.

3. Image rejection--poor overall, disgusting on low band. Out of six different scanners I have owned, the 220 is by far the worst for low band interference. Be it electrical static, interfrequency modulation, image frequency, or whatever, it's there, and strong. I receive FM music over a wide number of low band frequencies, and I often cannot squelch it out. Even going 5 KHz higher or lower doesn't always help.

4. Sensitivity--not as good as the Touch. I can't even hear some UHF signals that I have no problems picking up with my Touch.

5. Operation--Say that I touch "Manual" to stop the scanning action or to lock onto an active channel. To resume scanning I press "Scan", but the scanning starts on channel #1, not on the next channel. A minor but unusual inconvenience.

6. Miscellaneous--The delay function is so short that it's almost non-existent. I am rather pleased with the aircraft band, but I really have nothing to compare that to. The aircraft and marine search functions are frivilous and unnecessary; the usual search function can accomplish the same results with more versatility.

I hope this info will help you in forming an evaluation of the BC-220. Most disappointing is the low band interference; otherwise, I feel it is a versatile and useable scanner.

P.S. Has anyone come up with a way to program the BC-220 for out-of-band frequencies??

TECHNICAL TOPICS (Cont.)

Following is a breakdown of the comments made by ED (IL-004) about the BC-220:

I.F.: BC-220: 10.8 MHz, BC-250: 10.85 MHz

Search Speed: BC-220: 4 or 11 ch/sec., BC-250: 5 or 15 ch./sec. (feels that both rates are too slow)

Priority: BC-220 takes too long to break away--conversation on the interrupted channel is lost.

Coverage: BC-220 starts at 144 MHz, BC-250 starts at 146 MHz on hi-band. BC-220 starts at 420.45 MHz, BC-250 starts at 420 MHz on UHF.

Search scan delay: BC-220: 1 sec. (too short), BC-250: 2 sec.

Sensitivity/Selectivity: Both receivers are the same.

In the BC-220, birdies are vastly improved BUT images are unacceptable!! As usual, 165.8 MHz and up has images from 144 MHz and up, but on aircraft, Hams/Business/Taxis/Telephone show up from 122.4 MHz up. (Ed. note: I really doubt that these spurious responses are images, due to the unusual relationship of the signals in question. This problem deserves a bit of additional investigation.) As usual, TV-IF appears from 40-46 MHz. (This is a normal response; the signals do exist--Ed.) Do not confuse these with birdies. Bearcat must perfect track-tuning.

Scan interval: 30-50 MHz: 5 KHz
118-136 MHz: 25 KHz
144-174 MHz: 5 KHz
420.450-512 MHz: 12.5 KHz

Follows BC-210 pattern instead of BC-250. 118-136 MHz should be 12.5 KHz.

Marine scan is 156.05-157.25 MHz and 160.625-162.025 MHz in 25 KHz increments. Note that this included business and railroad frequencies.

ED (IL-004)

These two comments regarding the Bearcat BC-220 represent the most thorough I have received to date. Of course, the comments are those of the author alone, as I have not had the opportunity to operate one of these receivers as yet. The RCMA, I have heard through the grapevine, has begun to show renewed interest in a product testing program that, if developed, should provide all of its members with a good source of reliable, objective data on new products such as these. Too often, the magazines involved in the business will simply reprint specifications and remarks issued by the manufacturer themselves, a practice which is ridiculous and often misleading. Since the RCMA does not derive any appreciable part of its operating income from advertisements paid for by these manufacturers, we are free to publish what we feel is the truth about their products. In most cases, I am sure that the manufacturer himself would want it this way. I want to thank those of you who have sent me equipment tests and opinions, and at the same time encourage those of you who have not written to do so.

ROLLING YOUR OWN FOR PERFORMANCE

For those of you who are interested in top-notch receiver performance with a minimum of frills on a single frequency, allow me to suggest the following alternative as my parting shot for this month.

Hamtronics, Inc. of Hilton, New York, offers a selection of single or multiple channel VHF FM receivers in kit form. These receivers offer excellent sensitivity, astounding selectivity (with the optional filter installed), and the clean, crisp performance attainable at present only with a crystal controlled receiver. A single channel receiver with the 8-pole filter option will make you $100 poorer, but for the listener who wants to get down to business, it's the best your dollar can buy. The six-channel versions of the receiver offer the same level of performance

for those who require the ability to change frequencies within a limited range. Preamps and converters have been available from Hamtronics for some time now, and while I am not endorsing any of their products directly, I do recommend the single channel receiver for those of you who are serious about their listening. I am working on some communications product designs at the present time, and will be making this information known at the appropriate time.

For the present, at least, good luck and good listening!!

The following from BOB GROVE (NC-006) -- Added to Chuck's column:

A new member, Mary Beard (she prefers to be called "Mickey"!), was one of many readers who inquired as to how a converter could be used to extend the listening range of a scanner. I am presently preparing such an article for publication in CB Magazine in a few months, but let me suggest a few hints. First, 406-420 MHz and 135-144 MHz are a snap. Several manufacturers presently offer factory wired and kit versions of such converters. You merely connect them between your antenna and scanner, and you're on the air. The manufacturer will suggest a convenient conversion scheme. I prefer simplicity. In my 135-144 MHz converter from Hamtronics, I ordered it so that I could hear that range by tuning 35-44 MHz on my scanner. The only thing to keep in mind is that you must convert down in frequency, and that conversion to exactly $\frac{1}{2}$ frequency are taboo.

For FLEETSATCOM, problems arise. Although transmissions are FM, they are scattered from 240-270 MHz. A 30 MHz spread like that is impossible to cover adequately with standard converters. Choose a convenient target center frequency and be satisfied with a few MHz either side.

The following manufacturers presently offer receiving converters usable with scanner radios:
Hamtronics, Inc. 65 Moul Rd., Hilton, NY 14468
Vanguard Electronic Labs, 196-23 Jamaica Ave., Hollis, NY 11423
VHF Engineering, 320 Water St., Binghamton, NY 13901
Hermes, 3997 Elkcam Blvd. SE, St. Petersburg, FL 33705
Janel Laboratories, 33890 Eastgate Circle, Corvallis, OR 97330
Advanced Receiver Research, Box 1242, Burlington, CT 06013
Order catalogs and take your choice.

Wayne Smith has a novel suggestion and wonders if other members have comments. With so much mobile teletype data being transmitted by police agencies, it seems that a home computer such as a TRS-80 could be programmed to decode the ASCII messages, fed by an acoustical coupler. Any ideas?

NEW MEMBERS (continued from page 21)

GA-009	Larry, Statesboro, GA 30458
GA-010	L. J. Short, P. O. Box 824, Hartwell, GA 30643
GA-	Steven Sonenshine, 1583 Beechcliff Dr. N.E., Atlanta, GA 30329
IA-010	Ronald Burgers, 1311 14th, Rock Valley, IA 51247
IA-011	Michael W. Scheel, 3403 Jersey Ridge #224, Davenport, IA 52807
IL-047	Bob Herron, 1206 S. Chestnut, Princeton, IL 61356
IL-048	Samuel W. Brandenburg, RR 1, Milmine, IL 61855
IL-049	Stanley P. Ehmke, 900 Ann Eliza St., Pekin, IL 61554
IL-050	Michael N. Tharp, 4806 Fantasy Ln., Alton, IL 62002
IL-051	Robert L. Rohde, 4703 N. Oketo Ave., Harwood Heights, IL 60656
IL-052	L. M. Dunn, 2115 Butternut Ln., Northbrook, IL 60062
IL-053	Gary L. Mannering, Apt. 19, 621 Crescent Dr., Champaign 61820

(continued on page 62)

Railroads

Marvin Suggs, Jr., Editor

Send information about railroad frequencies and their uses, radio system details, tips for monitoring railroads, explanations of railroad jargon and related information and questions to: Marvin Suggs, Jr., 1946 Carolina Ave., Port Arthur, TX 77640.

First of all, I want to thank all of you who have been sending in frequencies and other information relating to railroad radio.

From ED RYAN (CA-AL-001) Northern California Railroad Frequencies

SOUTHERN PACIFIC RR	Coast Division	161.55 Pri.Road Freq
	San Joaquin Division	161.40 2nd Road Freq &
	Sacramento Division	Railroad Police
	San Francisco Bayshore	160.35 Yard Rptr
	Roseville Yard	160.47
	San Jose Newhall Yard	160.47 Rptr
	San Francisco PBX Rptr	160.89-161.04 input
	also	160.95- (input)?
	West Oakland Yard simplex	161.10
	Northwestern Pacific Division	160.80 B
		161.295 M
		161.52 B
		161.55 BM
WESTERN PACIFIC RR	Primary Road Frequency	160.38-160.26 input
	Simplex	160.38
	Remote Base / Repeater	160.68
	San Francisco PBX Rptr	161.28- (input)?
BAY AREA RAPID TRANSIT	Administration & Paging	43.78
	Train Dispatch	160.86
	Railroad Police	453.15
	Maintenance of Way	453.975

From TERRY (IN-003)- Fort Wayne, Indiana, Area Railroad Freqs.

CONRAIL	Junction Tower	160.80
	Mike Tower	160.80
	Adams Tower	160.80
	also System Road Ch.1	160.80 B/MR
	Fort Wayne Yard Operation	161.07 B/M
	Maintainer (Track/Signal)	161.13 "Chat"Ch.
NORFOLK & WESTERN RWY.	East Wayne Yard	161.25
	Fort Wayne (NKP) Dispatcher	161.25 B/MR
	Fort Wayne (Wabash) Dispatch	160.44 B/MR
DETROIT TOLEDO & IRONTON	Road Channel (Ohio)	161.22 B/M
CHESSIE SYSTEM (B & O)	Garrett,Indiana,Yard	160.23 B/M

From EDWARD (CT-005)-East Hartford, Connecticut, Area.

AMTRAK & CONRAIL	Road Channel 1	160.80
CONRAIL	Road Channel 2	161.07
AMTRAK	Police(Repeater)	161.295

(Editor's comment...The above is a great list of railroad freqs. Thanks alot for the help, Ed.)

Well, guess that's all now! See ya next month!

Aircraft

Mark Holmes, Editor

Send private, commercial, firefighting and law enforcement aircraft frequencies of interest in the 108-136 MHz range and frequencies in other bands associated with airports and aircraft plus questions, articles, and tips related to aircraft monitoring to: Mark Holmes, 1601 W. Maplewood, Marion, IL 62959. Please send all military aircraft frequencies and info to the "MILITARY" column.

My name is Mark Holmes, (IL-8) and I am happy to say that I have become the new editor of this column beginning with this issue. I am 24 years of age and live in Marion, Illinois.

I have been interested in communications for about 7 years and in addition to this club, I also belong to SCAN and SPEEDX. With the exception of Ham Radio and CB, just about all forms of two-way communications interest me, however aviation heads the list.

I am fortunate in that I live in a part of the United States which has one of the highest concentration of jet traffic flying overhead. The deregulation of the Civil Aeronautics Board has benefitted all of us who are interested in aviation communications.

In addition to communications, I am also an airline enthusiast, plus I like bowling, playing softball, fishing and I am a big fan of the St. Louis Cardinals and Atlanta Braves baseball clubs.

Pertaining to the aircraft band, my favorite listening consists of ATC, ARTCC's, ARINC, Airline Companies and Aircraft Airborne Telephones in the 454 and 459 MHz region on UHF. On HF, my interests include commercial aircraft on international flights, military aircraft and Air Force Bases. My equipment includes a Bearcat 250, 4 Bearcat 220's and a McKay-Dymek DR-33 shortwave receiver.

Although I will try to put in all aspects in this column, I will devote a small portion to news of the airline industry and short features each month pertaining to airline companies in the United States. Any members who would like to submit feature articles for this column, I would be pleased to receive them.

I have a lot of material which I would be happy to photocopy for interested individuals which I will try to list in many issues. If the prices for photocopies seem a little steep, it's because copy paper isn't cheap.

In closing, I want to say that this is "your club" and this column is for all of us. I would really appreciate any comments or criticisms plus questions which you may have. Please help support this column and I hope that you will enjoy it.

AERONAUTICAL RADIO, INC. (ARINC)

ARINC is a communications company that specializes in providing information handling and processing systems plus other facilities and services, designed specifically to fulfill the requirements of the aviation community. ARINC owns and operates a nationwide VHF air/ground communications network, provides communication service to aircraft operating over oceanic routes via long range HF and extended range VHF from ARINC gateway stations, furnishes point-to-point communications via radio and leased wire circuits, and operates one of the largest private electronic message switching and processing systems in existence.

ARINC was organized as a corporation in 1929 with the airline companies being the principal owners and users. However, its services are extended to all aircraft operators, large or small, U.S. or foreign, scheduled or supplemental, business, private and government. All are served on a not-for-

profit basis with charges for service based on costs distributed in proportion to use. Under the guidance of a Board of Directors, composed mainly of people from its user organizations, ARINC has gained the reputation in industry and government of a successful phenomenom.

Today, a nationwide system of some 1,600 VHF ground radio stations provides the communication channels through which aircraft keep in touch with their operating offices. More than 200 of these stations are interconnected into networks by thousands of miles of telephone lines so that nationwide VHF service can be provided from three communication centers in the continental United States: New York, Chicago and San Francisco.

To provide VHF service as far out as possible along the oceanic routes, special high powered extended range stations are employed. Beyond that, long range HF radio provides the overseas service from ARINC gateway stations at New York, San Francisco, San Juan and Honolulu.

The ARINC domestic communications channels are used primarily for the handling of company operational control communications as distinct from FAA air traffic service which is on adjacent VHF frequency bands. The ARINC overseas services handle both company operational control and FAA air traffic service communications. All communication flows directly through the ARINC communication center to or from the airline dispatcher, FAA controller, or others directly involved with flight operations.

The ARINC Electronic Switching System (ESS) handles the entire teletype message switching requirements for many of the airlines. In addition, this ARINC information handling and processing facility provides the multiple access interconnection between all airlines for the voluminous interline traffic. ARINC was a pioneer in this field of "real time" online computerized switching and its ESS is one of the largest private switching and processing systems in existence, handling messages at a rate of over 1.5 million per day.

UNITED AIRLINES

United Airlines was formed on July 1, 1931 as the management company for Boeing Air Transport, National Air Transport, Pacific Air Transport and Varney Air Lines. In 1933, a reorganization converted United Airlines from a management company to a full-fledged operating company.

When World War II came along, United Airlines formed a Victory Corporation to starve off government takeover. United contracted to provide an air transport service for the government for cost plus $1. This action demonstrated the value of the airline industry in a time of national defense and also insured post-war commercial aviation freedom.

The demand for commercial passenger travel after the war was tremendous. More employees and more planes were needed. During these years, United also expanded its route structure. United foresaw the future impact of a Hawaiian market and application was made to the Civil Aeronautics Board. The Hawaiian route was awarded to United and the growth continued. In June 1961, United took over Capital Airlines in what was at that time, the biggest-ever airline merger.

Today, United is one of the largest airlines in the world, and probably the world's biggest privately owned airline in terms of passenger miles flown and passengers carried. The airline serves the United States from the Atlantic to the Pacific and beyond to Hawaii, and from Mexico to Canada. United has approximately 1,700 flights a day serving well over 100 cities and carried 41.4 million passengers in 1978. The airline has nearly 55,000 employees.

Current fleet includes: 37 DC-10-10 plus 10 on order, 18 747-122, 54 737-222, 63 727-22, 24 727-22C, 28 727-222, 76 727-222A, 5 DC-8-51, 11 DC-8-52, 14 DC-8-54F, 30 DC-8-61, 9 DC-8-62 plus 30 Boeing 767-222 on order.

Aircraft (continued)

Editor's Note: In the September issue, I listed the frequency allocations for aircraft airborne telephones along with the nationwide listing of air/ground stations and channel numbers which they use. I was in error because I forgot to mention that some are not as yet in service. The following stations were in service as of January 1, 1979: Alton, IL; Arlington, NB; Artesia, NM; Atlanta, GA; Beckley, WV; Boston, MA; Casper, WY; Charleston, SC; Charlotte, NC; Chicago, IL; Cocoa, FL; Columbia, TN; Dallas, TX; Dayton, OH; Denver, CO; Detroit, MI; Elmira, NY; El Paso, TX; Fairbanks, AK; Fresno, CA; Harlingen, TX; Jackson, MS; Klamath Falls, OR; Las Vegas, NV; Little Rock, AR; Los Angeles, CA; Miami, FL; Middlesboro, KY; New Orleans, LA; New York, NY; Oklahoma City, OK; Pendleton, OR; Phoenix, AZ; Pittsburgh, PA; Redding, CA; Reno, NV; Salem, OR; Salina, KS; San Diego, CA; Santa Barbara, CA; Seattle, WA; Shreveport, LA; Silver City, NM; Spokane, WA; Sweetwater, TX; Tampa, FL; Troy, AL; Vincennes, IN, Washington, DC; Waterloo, IA and Wausau, WI. As new stations are implemented, I will list them in this column. MH

Members who would be interested in purchasing photocopies of current Jeppesen terminal approach charts may write to Mark Holmes, 1601 W. Maplewood, Marion, IL 62959. Charts include all instrument approaches, large airport diagrams and communications frequencies plus profile descent procedures, STAR and SID routes, airline gate assignments and other information for large airports. Prices per airport are as follows: $3 for large airports plus 45¢ in loose postage and $1 for small airports plus 30¢ in loose postage. If interested, please send the name of the airport(s) and I will quote you a price.

Members who would like photocopies of the ARINC VHF air/ground enroute system map for the 50 states, Puerto Rico and small portion of Canada plus the HF worldwide network map for shortwave may send 30¢ in loose postage to Mark Holmes, 1601 W. Maplewood, Marion, IL 62959.

Members who would like to know the flight itineraries of the various airline flights that they hear, may send the airline flight numbers to Mark Holmes, 1601 W. Maplewood, Marion, IL 62959. I will give the itinerary, schedule and type of aircraft operated. Send as many as you wish, and a SASE would be appreciated.

From IDEN (CA-RI-001): "PRESSURE COOKER" --- "Pressure Cooker" is the title of a non-fiction book about air traffic control and air traffic controllers. It focuses mostly on Los Angeles International Airport, Los Angeles TRACON and Los Angeles Center and the controllers. The first twenty pages or so seem a little slow or perhaps it's a matter of getting used to the author's style. At any rate, it picks up and provides informative and interesting reading. In many places the author takes the reader minute by minute through real air traffic control situations and includes both sides of all pilot/controller radio communications word for word. Since aircraft radio communications jargon and terminology isn't known to many people, the book probably would be much more enjoyable for those who understand at least the basics. Active aircraft communications listeners would no doubt enjoy the book and wouldn't have to think too hard to understand what is taking place. On the other hand, persons who have never listened to aircraft communications might have to stop to think in order to fully visualize the different situations. The author does offer explanations of many things that go on and he also urges the reader to read all the numbers in the pilot/controller communications to get a better feel for the type of information they have to deal with, though to some, he admits, it might not be too interesting. An active aircraft listener would, of course, not miss a single number or word in such communications.

If one is not an aircraft listener and has no receiver for aircraft frequencies, the book can serve very well to expose the reader to the subject and possibly help him in deciding if it is something he would

like to listen to first hand as a hobby. It must be remembered though, Los Angeles, Orange County and the western ends of Riverside and San Bernardino Counties probably have the best aircraft listening in the entire world. So, if you read the book, become interested in aircraft listening, but live in a rural community away from a metropolitan area, you will not get all the activity and excitement that exists in this geographic area and which is depicted in the book. From page 43 and 44,

> Congested as it is with more than 495,000 landings and takeoffs a year, Los Angeles International Airport falls far short of being the busiest airport in the crowded, 40- by 100-mile Los Angeles basin.
>
> Just thirty-five miles south of LAX, a few minutes as the jet flies, is Orange County Airport, second busiest airport in the United States (LAX is number seven) with 648,000 landings and takeoffs a year. Only Chicago O'Hare, busiest airport in the world, has more traffic than Orange County.
>
> Almost exactly half-way between Orange County and LAX, lies Long Beach Airport, fourth busiest in the entire United States, with 540,000 landings and takeoffs each year.
>
> Van Nuys Airport, third busiest in the nation with close to 610,000 landings and takeoffs annually, is a mere fifteen miles north of LAX's runways. Closer to LAX than any of these - twelve miles to the southwest - is Torrance, thirteenth busiest airport in the United States, but still with more air traffic than JFK, Washington National, San Francisco, LaGuardia, Miami International, Newark, or sprawling Dallas-Ft. Worth.
>
> Also within the radius of a circle which would just touch Orange County Airport thirty-five miles south of LAX are eleven additional airports, six of which each handle more air traffic than the major airports of Oklahoma City, Cleveland, St. Paul, Buffalo, Minneapolis, and Tampa. Taken together, their traffic is more than twice that of Los Angeles International itself.
>
> Thus, at any moment, nearly one-fourth of the total number of aircraft aloft over the more than 3,000,000 square miles of forty-eight contiguous states, are in the small airspace above the densely-populated and often smog-filled Los Angeles basin.

My wife, not a radio nut, read the book along with me. Aircraft communications is even interesting her some now. About one-fourth of the way into the book, we drove to L.A. International, about one and a quarter hours away to see some of what we had been reading about. A pocket aircraft scanner would have been very nice to have but we didn't have one. (I understand Bearcat will market one soon, the BC 2-4AC.) If you live in Southern Calif. and decide to check out the airport you will find that parking can be a problem. Once that is handled, the best place to go for overall viewing is on the observation deck above the restaurant which stands alone supported by large arches. You can't miss it. Go in the door. You will be in a small lobby and see three elevator doors. Find the one that says "Observation Deck", it's on the left, and go on up. It's open to the public. Take the book along since it has a diagram of runways and taxiways. Pleasure gained from reading the remainder of the book is certainly enhanced by such a visit. Go in the late afternoon during the arrival rush.

Now quoting from the book jacket,

> An exciting, behind-the-scenes story of the high-tension world of air traffic controllers told by an experienced pilot who shared their lives in the most high-density air traffic area of the world - the 40 by 100-mile Los Angeles basin which at any one time contains nearly one-fourth of all aircraft aloft over the United States.
>
> "Every time you board an airliner," stresses the author, "your life is in the hands of air traffic controllers you never see. Your pilot never takes off or lands, never climbs or descends or turns,

Aircraft (continued)

nor even taxis to or from the terminal gate without precise directions from air traffic controllers in airport towers and darkened radar rooms."

There is no room for error in controllers' assignments of headings and altitudes to be flown by pilots who can't see beyond their windshields. Yet controllers live with the knowledge that they are fallible in a job that leaves no room for fallibility.

"As a controller," the author was told, "your voice has got to be like a surgeon's hands. That surgeon might be scared as hell; he might be so nervous he's screaming at everybody; or he might even be drinking too much; but when he's in that operating room his hand has got to be rock steady. When you're working traffic you've got to sound cool; and you've got to sound sure and authoritative. When you screw up, or when somebody else screws up and you've got to do something fast or you're going to have a mid-air, your 'Continental 233, left turn to 190' has got to sound like the most routine communication in the world."

Pressure Cooker is the story of the anonymous men and women, dedicated almost beyond the ability of any outsider to understand, who are individually responsible for more lives during each work shift than is a surgeon during his entire career.

I have been an active aircraft communications listener for a number of years and I enjoyed the book thoroughly. I learned information about behind-the-scenes procedures that will add to my listening enjoyment. I've gained insight about controllers as people. I do recommend the book.

"Pressure Cooker" by Don Biggs, W. W. Norton & Co., New York, copyright 1979, $9.95 hardcover.

FEDERAL GOV'T

Robert B. Grove, Editor

Send all non-military Federal Government frequencies, radio system details and related questions to: Robert B. Grove, Route 1-Box 156, Brasstown, NC 28902. Sensitive federal law enforcement frequencies will not be published.

Last month, I included a "tease" in this column. As you may recall, I suggested that there was a way to extend the receiving range of any scanner with the addition of simple external device which was not a converter. Any idea as to what the device is? The answer is: A preamplifier tuned to the frequency of interest, below the lowest tunable range of the scanner. Just so long as the desired frequency is not more than twice the IF lower in frequency (approximately 21.6 MHz), the signal may now be received with excellent sensitivity as an image twice the IF higher. Although we have mentioned image reception before, it would be well to provide an illustration.

Suppose you wish to hear some of the FM traffic on the ATS-3 satellite on 135.575 MHz. Obviously, no FM programmable scanner will cover this range (although aircraft AM scanners will). You own a Bearcat with a 10.85 MHz IF. The image will be found twice the IF above the receive frequency; i.e., 135.575 + 21.7 = 157.275 MHz.

Although it is <u>theoretically</u> possible to hear this image frequency, the fact is that satellite signals are extremely weak as it is, and

image frequencies are purposely weaker yet by receiver design. What we need is a way to increase the signal level of the image, while suppressing incoming signals which would normally be heard on the image frequency (in this case on 157.275). A high-Q preamp can do the job when peaked on the desired receive frequency (135.575 MHz in our sample). It is also possible to hear several MHz either side of that frequency by merely entering new frequencies into the scanner.

This same scheme may be used to monitor 406-420 MHz (now heard by tuning twice the IF higher), roughly 427-441 MHz. Simply substitute the proper preamplifier.

These preamps are available from the same converter manufacturers listed elsewhere in this month's magazine.

Three Mile Island emergency communications: A number of our members were wondering about the communications frequencies used by the Nuclear Regulatory Commission during the investigation of the Three Mile Island crisis. Hugh Coleman of Cleveland, Ohio, just may have the answer. He informed me that NRC was using a block of frequencies assigned to the Department of Interior Fire Cache: 168.050, 168.2000, 168.600, 168.625, and 170.000 MHz.

Bob (KS-001) wonders where interested persons may view IRAC microfiche. Unfortunately, all Federal agencies which are recipients of the data receive the classified run. Unclassified files are prepared only on special order. We are working on that now, and will have an announcement to make by the next issue!

ED (NY-041) wonders what the laws are regarding publishing lists of Federal law enforcement frequencies. He saw such a list while perusing a book rack in a radio store in California. The fact is, Ed, that you may publish any frequency of any nature. You may not, however, divulge the nature of any specific communication which you might have intercepted while listening to that frequency, nor may you use that information not intended for you to hear for yourown personal gain. Even in cases of national security, the burden of proof is on the Government to show that your intent was malicious before the Espionage Act may be invoked.

Most of us prefer to keep such frequency information on a person-to-person basis rather than wholesale the information to all eyes. (Anyone have juicy frequencies to swap?)!

ED (MA-017) has several interesting questions which apply to most readers.

Q. Why do some Federal agencies use callsigns while others do not?

A. All Federal agencies are issued callsigns. Most are simply lax about their proper use; others wish to protect their anonymity by giving as little information out on the air as possible, often substituting tactical callsigns like "Atlas" and "Homeplate". Some announce their callsigns at sign-on and sign-off, while still others incorporate a portion of their authorized callsigns into unit designators. FBI is famous for this. "300" is really KEV300.

Q. Does the FCC still use their old 41.06 MHz low band allocation?

A. Yes, for portable operations in some areas. For routine administrative activities they have switched to high band on the nationwide 167.05 MHz repeater output frequency (172.800 MHz input).

Q. I hear the GSA Federal Protection Agency security operations as a repeater output on 417.200 MHz. What is their input frequency?

A. In most large cities, Federal buildings utilize that frequency for both simplex and repeater output. Input is 419.175 MHz.

Federal Gov't (continued)

From ED

164.425	U.S. Park Service, Minuteman Nat'l Park, Lexington
167.050	FCC Field Office repeater output, Boston
169.850	US Postal Service Inspectors, S. Boston (repeater)
170.575	U.S. Forest Service, White Mt. Nat'l Forest (repeater output)
171.525	" (repeater input)
171.725	U.S. Park Service, Cape Cod Nat'l Seashore (repeater output)
172.525	" (repeater input)
172.800	FCC repeater input and simplex
417.200	GSA Federal Protection Service KPA5Ø8 (repeater output)

From BEN (CA ED 001)

168.575	U.S. Forest Service northern backbone link
166.4875	Bureau of Land Management, NE California
417.850	Bureau of Land Management UHF link

From TONY (NJ-005) (NEW YORK CITY AREA)

162.825	Immigration and Naturalization (repeater out)
162.900	" "
163.4125	U.S. Army Corps of Engineers simplex (Jersey City)
163.200	U.S. Marshal (repeater)
163.5375	U.S. Army Corps of Engineers
167.125	U.S. Postal Service trucks simplex
167.975	VA hospital paging
167.175	National Park Service
168.000	VA hospital paging (Brooklyn and St. Albans)
168.525	VA hospital security (nationwide)
170.350	VA hospital paging (Bronx)
170.625	Immigration and Naturalization
170.3375	Unknown
171.175	U.S. Postal Service trucks, simplex (NYC and Secaucus)
171.2375	VA hospital paging
171.4125	Unknown (steady tone)
172.225	GSA executive messenger service, simplex
173.6125	U.S. Postal Service trucks, simplex (Bronx and JFK Airport)

Many thanks this month to Ben, Ed, and Tony. How about some more contributions from our readers? See you next month!

Added to Bob's column by THE editor:

JOHN (IL-010) sent in some interesting information on NOAA Weather Radio. Normally, I don't consider listening to NOAA weather broadcasts (162.550, 162.400 and 162.475 MHz) to be interesting but some information that is available to the public from them is worth considering. They offer a pamphlet entitled "NOAA Weather Radio" which lists NOAA weather transmitting stations nationwide and also information entitled "Radio Receivers and Methods To Improve Reception of Weather Radio Broadcasts". It is this latter one (one 8½ x 14 inch page printed on both sides) which I found to be interesting. It touches on the subjects of radio wave propagation, receivers, interference and antennas (with illustrations). These can be obtained free by requesting these specific titles from: NOAA National Weather Service W112, 8060 13th St., Silver Spring, MD 20910.

☆ MILITARY ☆

Robert B. Grove, Editor

Send all ARMY, NAVY, MARINE and AIR FORCE (including military aircraft) frequencies and radio system details to: Robert B. Grove, Route 1-Box 156, Brasstown, NC 28902. Sensitive military frequencies will not be published.

Although there are some block allocations which are predominately military, Federal Government rules and regulations provide for military radio operations anywhere in the spectrum. But it must be on a non-interference basis. For this reason, it is not unusual to find National Guard training operations or a Navy shore patrol operating right smack in the middle of a group of non-government frequencies. The USS Nimitz, for example, used 33.8 MHz during a recent visit to Fort Lauderdale, Florida.

Low band is particularly popular for this seemingly capricious selection of frequencies by the U.S. military. A few of the more active frequencies include: 30.30, 30.40, 30.45, 30.50, 32.20, 34.20, 34.29, 34.30, 34.45, 34.50, 34.60, 35.00, 36.50, 36.70, 36.80, 37.00, 40.25, 40.45, 40.50, 40.80, 40.9941.50, 41.70. Monitoring of these frequencies is prime during the present sunspot peak, as skip favors long-distance propagation on low band. Perhaps our members would like to provide more information on some of the tantalizing low band operations!

From ED (MA-017)

34.83	U.S. Army base fire department AAB421 (Ft. Devens, MA)	
38.85	" " AAB420	
163.025	U.S. Army Corps of Engineers	(repeater input)
163.4375	" emergency channel	(repeater input)
167.925	" "	(repeater output)
163.125	" ch. 2	(repeater input)
168.125	" ch. 2	(repeater output)
168.325	" ch. 1	(repeater output)
171.725/171.825/171.925	telemetry	

From TONY (NJ-005)

148.950	U.S. Navy MARS	(repeater output)
164.025	Ft. Hamilton operations	(repeater output)
164.550	Ft. Monmouth security	(simplex)
165.2625	U.S. Coast Guard security, Governors Island	
165.0875	Ft. Monmouth security	(repeater output)

From WILLIAM (IL-007)

165.0875	U.S. Army Rock Island Arsenal security

From ED (CA-SC-003)
(Moffett Field and NASA Ames Research Center)

140.04	Marine Guards security/EOD
139.575	Base security
140.25	Fire/crash crew
142.575	Tower to ground vehicles
138.675	Squadron maintenance to line shack
149.03	Paging
142.02	Naval security, point-to-point

Military continued

171.150 Ames security ch. 1 (repeater output)
170.350 Ames security ch. 2 (repeater input/car-to-car)
(Ed would appreciate other frequency assignments in the 138-144 MHz band ...and so would I!)

From GEORGE DuBOIS (Portland, OR)

163.4875	USAF Portland AB	F2	Special Police
163.525	USAF "	F1	" and base ops.
165.0125	" "		Flightline maintenance
298.3	" "		" air to ground
165.1625	" "		Flightline and police
165.0625	Ft. Vancouver Army barracks, MP's		
163.5875	National Guard "Minuteman" maneuvers		
413.125	USAF McChord AFB special police		
164.500	U.S. Army Corps of Engineers, dams		(repeater output)
165.0375	"		(repeater input)
163.4125	"		alternate
163.4375	"		Navigation (repeater output)
164.175	"		(repeater input)
412.8375	"		UHF link

George is also interested in sharing low-band skip military with other members.

Thanks to all of our contributors this month. Will I see more of you next month?

Like skip? Then WTFDA is for you!

The Worldwide TV-FM DX Association deals exclusively with long distance reception on the TV, FM and public service bands. Our monthly magazine, the VHF-UHF Digest, explores skip and other forms of propagation in detailed technical articles. We also feature information on antennas, receivers, and other items used by TV-FM-PSB DXers. In addition, the VHF-UHF Digest contains up-to-date information on station developments, such as facilities changes, new formats, etc. Round it out with member's log reports and DX pictures, and you have a magazine that's hard to beat!

For a sample copy of the VHF-UHF Digest, send $1 to WTFDA, P.O. Box 97, Calumet City, IL 60409. WTFDA also offers detailed station lists and DXing supplies.....write for more information. We look forward to seeing you join WTFDA!

Best wishes to RCMA, and many thanks for giving us the opportunity to tell you about WTFDA!

FCC TOPICS

George DuBois, Editor

Send FCC news and information of interest that relates to two-way communications above 30 MHz and questions regarding the FCC Rules and Regulations to: George DuBois, 10048 NE Campaign, Portland, OR 97220.

The service of the month this month is the Special Emergency Radio Service, what you probably call the ambulance channels. Persons eligible in this service include hospitals, ambulance companies, disaster relief organizations (such as the Red Cross), rescue organizations (beach and ski patrols), and public agencies that provide medical service, such as your local fire department rescue unit. Also eligible are such diverse activities as school buses and veterinarians. Last, but not least, phone companies can be licensed for use in remote areas for use for emergency communications when normal circuits are disrupted.

Frequencies available for assignment include the following:

33.02*	37.94*	47.46	155.16	155.295
33.04	37.98*	47.50	155.175	460.525*
33.06*	45.92	47.54	155.205	460.55*
33.08	45.96	47.58	155.22	462.95*
33.10*	46.00	47.62	155.235	462.975*
37.90*	46.04	47.66	155.28	

*shared with other services

The following channels are available to hospitals and also to ambulance companies to communicate with hospitals:

155.325	155.385
155.355	155.4

These frequencies are available for one-way paging:

35.64	43.68
35.68	152.0075
43.64	157.45
	163.25

155.34 may be used as a intersystem mutual aid channel and, secondarily, as a regular ambulance to hospital channel. 47.42 is available to disaster relief organizations.

The following frequencies are available for use in low-power portable use (1 watt on UHF, 2.5 on VHF) in a mobile repeater system, where the transceiver in the ambulance is equiped to retransmit the signals to the hospital, or whatever. The UHF channels can be used for telemetry, such as EKG's.

150.775	458.075
150.79	458.125
458.025	458.175

Last, but of course not least, are the famous Med-net channels. These are always written about like everyone in the country should be listening to them, even though there's nothing on them but static in most areas. They are used in a system where the ambulances are dispatched on a dispatch channel and are then assigned one of the eight channels for ambulance to hospital use. The frequencies and their channel names are:

463.0	Med 1	463.1	Med 5
463.025	Med 2	463.125	Med 6
463.05	Med 3	463.15	Med 7
463.075	Med 4	463.175	Med 8

Med 1,2,and 3 can be used for telemetry, 4 through 8, voice. The mobile frequencies are five mHz. higher.

If a company is licensed on these channels, they must be equipped for all eight channels, so as to alternate channels when required. To go with these are the two dispatch channels. Actually, there are four, the original two being 460.525 and 460.55. These, of course, are right above the 460 mHz. public safety channels. They can also be used for regular ambulance company use on a secondary basis, but all use is only until March 1, 1986. Then they must use 462.95 or 462.975. These are right below the eight Med-net channels and are assigned to the Police Radio Service. Make sense? Anyway, the FCC, in their wisdom, decided to swap the two sets of channels a few years ago and in the meantime the Special Emergency Radio Service is the primary service on the 460 channels and secondary to present Police use on the 462 channels until 1986. No new licenses have been issued since 1977 on the 460 channels, so if they aren't used in your area, disregard them.

There may be some confusion regarding the 163.25 paging channel. A lot of publications still list 162.6625. What's the deal? Well, this is where your government did something for you and me, the common citizen. The FCC decided a few years ago that most people that would be listening to the National Weather Service would be doing so on inexpensive (read 'cheap') "weather radios." Needless to say, 162.6625 is right in amongst the three NWS channels and caused considerable interference in some areas. So all operations were, or are being, moved to 163.25. End of problem.

What's on all these channels in your area? Before you start looking, here's a few tips. If you live in a smaller town, a bigger ambulance company in a nearby city may dispatch your local company, usually only at night. Another thing to look for is where a Radio Common Carrier (answering service) dispatches the ambulance on an RCC channel. Sometimes they may own the ambulance company. In this case, they page the ambulance personnel on the RCC channel, give them the location and then later continue the conversation on their own channel. Also, don't forget, ambulance companies and private hospitals are just as eligible for the Business Radio Service, which we will cover soon. If you're looking for a specific hospital, lets say, you might have to search the BRS channels. To check for Red Cross activity, listen after a big apartment house fire. All the low-band channels are wall to wall with skip now, so check them out at night. Beach and ski patrols are seasonal. Best time to listen is

the weekends. One final thing to watch for is the fact that most activity is two-frequency simplex (base on one channel, mobiles on another) on the UHF Med-net channels. Even private companies on the dispatch channels may not use a repeater.

No Special Emergency allocations are made in the T-band, but there are in the 851-866 band. (read on.)

The 851-866 Band

The band from 806 to 890 mHz. is allocated, on a secondary basis to TV channels 70 through 83. These are available for translators, which are low power (as low as 10 watts) TV transmitters which rebroadcast local TV stations to areas which cannot receive an acceptable picture otherwise, such as valleys or areas "shadowed" by hills. On a primary basis they are allocated to the Land Mobile Services. The bands from 806 to 821 and from 851 to 866 are available to all the Public Safety, Business and Transportation services we will cover. They are not assigned in any order. They just start with channel one at 851.0125 and go in 25 kHz. steps to 865.9875. The mobiles are 45 mHz. lower, from 806 to 821. If an applicant can show he will use the channel to 70% of it's capacity, he is assigned it exclusively, something the radio salesmen like to point out to prospective buyers. (what they don't point out is that a man using a hand-held is frying his brains as he speaks.) These channels are not available within range of the US borders, since we haven't worked out a few details with Canada and Mexico yet. Seems they don't want us interfering with their TV stations. Trunked systems are assigned channels in groups of five starting at 865.9875 and working backwards to 851.0125. A trunked system is a group of channels used in a system.(!) The simplest example is not unlike the VHF IMTS mobile phone channels, where a mobile transceiver automatically selects the first available channel, the next mobile the next channel, etc. As a matter of interest, here's how the whole band looks:

806-821	Land Mobile
821-825	Reserved
825-845	Wireline Radio Common Carriers
845-851	Reserved
851-866	Land Mobile
866-870	Reserved
870-890	Wireline RCC
890-902	Reserved

The battle goes on for the reserved sections. A few years ago the phone company interests even tried to gain one extra mHz. by asking the FCC to lower their limits to coincide with the TV channel allocations, since it wouldn't interfere, so why not? Uncle Charlie nixed the idea. The band from 902 to 928 is a government band, with radiolocation the primary service. The 904-912 and 918-926 bands are available to various non-government agencies for automatic vehicle monitoring and the whole band is available on a secondary basis for government fixed and mobile service. (Forget 216, Fish and Wildlife will never let anyone else in.)

MONITORING & THE LAW

Bob McGovern, Editor

Send all articles, references, copies of monitoring laws and questions pertaining to the legal aspects of monitor radio listening to: Bob McGovern, P.O. Box 5041, Lighthouse Point, FL 33064.

MONITORING IN FLORIDA

In 1951, Florida enacted a law designed to prohibit citizens from monitoring any Florida law enforcement radio transmission while in a motor-vehicle or business establishment. Minor changes in this law were made in 1969 and 1971, with the end result being the following statute.

843.160 Unlawful to install radio equipment using assigned frequency of state or law enforcement officers; definitions; exceptions; penalties

(1) No person, firm, or corporation shall install in any motor vehicle or business establishment, except emergency vehicles as herein defined, or places established by municipal, county, state, or federal authority for governmental purposes, any frequency modulation radio receiving equipment so adjusted or tuned as to receive messages or signals on frequencies assigned by the Federal Communications Commission to police or law enforcement officers of any city or county of the state or to the state or any of its agencies. Provided, nothing herein shall be construed to affect any radio station licensed by the Federal Communications System.

(2) As used in this section the term "emergency vehicle" shall specifically mean:
(a) Any motor vehicle designated as an emergency vehicle by the Department of Highway Safety and Motor Vehicles and said vehicle is to be assigned the use of frequencies assigned to the state;
(b) Any motor vehicle used by any law enforcement officer or employee of any city, county, the state, Federal Bureau of Investigation, or Armed Forces of the United States while on official business;
(c) Any fire department vehicle of any city or county of the state, or any state fire department vehicle;
(d) Any motor vehicle designated as an emergency vehicle by the sheriff of any county in Florida when said vehicle is to be assigned the use of frequencies assigned to the said county;
(e) Any motor vehicle designed as an emergency vehicle by the chief of police of any city in the state when said vehicle is to be assigned the use of frequencies assigned to the said city.

(3) This section shall not apply to any holders of a valid amateur radio operator or station license issued by the Federal Communications Commission.

(4) Any person, firm or corporation, violating any of the provisions of this section shall be deemed guilty of a misdemeanor of the second degree, punishable as

provided in Section 775.082 or 775.083.

With respect to construction and application, the following information is noteworthy.

(1) Under this section the word install applies to a vehicular installation when (1) the unit is connected to and dependent upon the electrical power system of the vehicle; and (2) the unit is connected to an external antenna capable of receiving police broadcasts.

As for the penalty, upon conviction, an offender may be imprisoned for a period not exceeding 60 days and/or be compelled to pay a fine of up to $500. If a pecuniary gain is derived from the offense by the offender, a fine of up to twice the gain may be imposed on the subject, in addition to the 60 days jail time. Of course, a defendant could be placed on probation with a special condition that he or she will not own, possess, or operate a police radio.

Realistically, the law is not enforced unless the subject goes to a disaster scene such as a traffic collision or crime and by doing so, interferes with the lawful actions of peace officers or firefighters. However, it should be remembered that any Florida peace officer may arrest the subject for the commission of said offense, regardless of whether the person went to a disaster scene, or not. In other words, it's all up to the officer and his feelings towards monitor radio listeners. The decision to monitor is up to you.

MAIL CALL

MIKE (CA-RI-011) states that he "whole-heartedly agrees that with the widespread use of monitors, the public could become the eyes and ears of law enforcement." Also, in his letter, he advised the following: "I was a NJ resident for 25 years, until October 1974. In 1972 I bought my first scanner. Being a volunteer firefighter, I was patrolling my hometown (Martinsville) on mischief eve (pre-Halloween). I parked in a vacant lot to keep an eye on some pranksters, and was immediately FI'd by the local PD (Bridgewater Township). Upon spotting my scanner they ran a check on any related laws and came up with 2A:127-4. I was strongly advised to remove the unit from my vehicle, and if I was caught with it again it would be confiscated." His letter continues by stating that "I called the local PD chief and asked about receiving permission to carry a scanner (I also stressed my vol. FD status). I was flatly denied permission, and it was re-emphasized that I would be arrested if caught with it."

JON (CA-OR-117) mentions that he would like to see a radio monitors legal group formed to deal with the problem of legal restrictions on the hobby. He remarks that "when laws broaden out and restrict all mobile use or any monitoring as in Minn. and Philadelphia, it is time to complain loudly! I don't agree with the view that the majority must suffer for the indescretions of a few, nor am I willing to relinquish my freedoms because some law maker feels it may aid law enforcement in some round-about way." Jon would like to hear from others who feel the same way, so how about it???????????

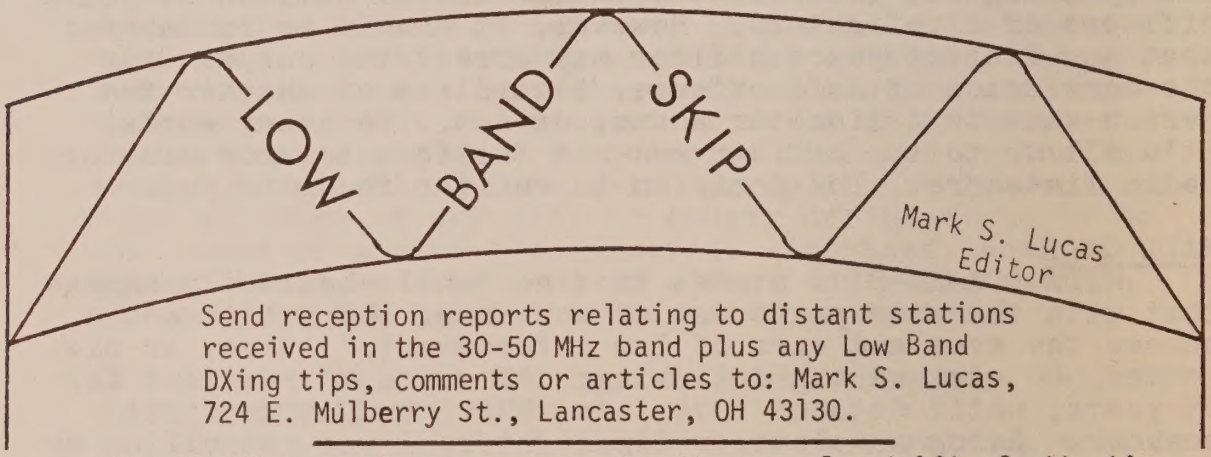
(Editor's Note) These are very fine thoughts on monitor radio listening and I agree with them 100%. The public can be and should be the eyes and ears of law enforcement. Only through citizen involvement can we have any real chance in

Monitoring and the Law (continued)

stemming the rise in crime. Monitor laws that prevent the hobbyist from monitoring should be challenged or repealed through appropriate action in the court system and legislative bodies.

In last month's column, an article was presented on the interference of a FBI kidnap investigation. Basically, the newspaper article stated that a TV reporter, John Miller endangered the life of the hostage by following the movement of the kidnappers. An interesting story involving the reporter and his use of scanners for profit (?)can be found in the PARADE section of most any major newspaper for June 17, 1979, (Sunday Edition). A future column of Monitoring and the Law will cover the use of scanners for profit with special attention paid to the news media. However, the aforementioned article in PARADE is worth reading.

What are your thoughts on the legal aspects of monitor radio listening? Express them as this is YOUR COLUMN.



Send reception reports relating to distant stations received in the 30-50 MHz band plus any Low Band DXing tips, comments or articles to: Mark S. Lucas, 724 E. Mulberry St., Lancaster, OH 43130.

F2 skip IS here! For any one paying the very least bit of attention, I personally have noted it since 21 September. And, this month's column contributors attest to that!

From DAVE (PA-014): 33.70 MHz No calls or IDs given Rescue Base BC-210 9-23-79 1610 EDT Los Angeles 2426 Miles!
(Editor's Notes: Dave stated that 33.70 is used by Westmoreland Co.Pa. FD. Wonder if any western members might be able to hear them?)

From BOB (CA-YO-001): 42.40 MHz KMG 445 "Oakland" CHP
Base BC-250 10-07-79 1353 EDT Oakland,Cal. 3000 miles
(Mobiles heard on 42.16 MHz)
42.12 MHz KMA 448 "Sacramento" CHP
Base BC-250 10-07-79 1353 EDT Sacramento,Cal. 3000 miles
(Moniles heard on 42.20 MHz)
46.32 MHz KMF 371 "Consolidated" Fire
Base BC-250 10-07-79 1406 EDT Pleasant Hill,Cal. 3000 miles
(Agency is Contra Costa Consolidated Fire Protection District)
42.54 MHz KJW 447 "Sacramento" CHP
Base BC-250 10-07-79 1415 EDT Sacramento,Cal. 3000 miles
(Mobile heard on 42.24 MHz)
42.54 MHz KMB 546 "Monterey" CHP
Base BC-250 10-07-79 1418 EDT Salinas Area,Cal. 3000 miles
(Mobiles heard on 42.24 MHz)
(Editor's Note: Bob is temporarily residing in Lighthouse Point,Florida. He'd also like to find out if any member can hear his agency on 45.42 and 45.16 MHz KBC 757 and KD5941.)

Low Band Skip (Continued)

From GEORGE (OR-001):

33.90 MHz	KQI 316	NO ID	Fire	Base	BC-210	1444 PDT	9-27-79
Hamilton Co. Ohio area							
33.78 MHz	KFF 309	NO ID	Fire	Base	BC-210	9-27-79	1456 PDT
Ocean Co., N.J.							
33.84 MHz	KQG 606	NO ID	Fire	Base	BC-210	9-27-79	1459 PDT
Port Clinton,Ohio							
33.90 MHz	KRZ 270	NO ID	Fire	Base	BC-210	9-27-79	1502 PDT
Fenton,N.Y.							
33.78 MHz	KUV 746	"Lockhaven"	Fire	Base	BC-210	9-28-79	1605 PDT
Millhall,Pa.							
33.82 MHz	KEG 776	"Irvington"	Fire	Base	BC-210	9-28-79	1703 PDT
Edison, N.J.							
33.78 MHz	KEJ 451	NO ID	Fire	Base	BC-210	9-28-79	1624 PDT
Ocean City,N.J.							
33.90 MHz	KQA 216	NO ID	Fire	Base	BC-210	9-29-79	1525 PDT
Cleveland,Ohio							
33.86 MHz	KGE 587	NO ID	Fire	Base	BC-210	1513	10-4-79
Bradford Co., Pa.							
33.86 MHz	KBH 343	NO ID	Fire	Base	BC-210	1520	10-4-79
McConnelville,Ohio (Also Malta,Oh)							
37.10 MHz	KCA 971	NO ID	Police	Base	BC-210	1536 PDT	10-5-79
Darien,CT.							
37.18 MHz	KLM 616	NO ID	Police	Base	BC-210	1212 PDT	10-7-79
Powhatan, Va.							
33.86 MHz	KBW 856	NO ID	Fire	Base	BC-210	1242 PDT	10-7-79
Granville,Ohio							
33.86 MHz	KDN 471	NO ID	Fire	Base	BC-210	1245 PDT	10-7-79
Plain TWP (New Albany),Ohio							
33.80 MHz	KGQ 676	NO ID	Fire	Base	BC-210	1530 PDT	10-8-79
Washington Co., MD.							
33.70 MHz	KJP 390	NO ID	Fire	Base	BC-210	1530 PDT	10-8-79
Westpoint,La.							
33.70 MHz	KKS 809	NO ID	Fire	Base	BC-210	1540 PDT+	10-8-79
Kenner,La.							
33.70 MHz	KUE 698	NO ID	Fire	Base	BC-210	1542 PDT	10-9-79
Montgomery Co., Pa.							
33.70 MHz	KKU 200	NO ID	Fire	Base	BC-210	1545 PDT+	10-9-79
Jefferson Parrish,La.							
33.52 MHz	KCF 790	NO ID	Fire	Base	BC-210	1550 PDT	10-9-79
Brimfield,Ma.							

(Editor's Note: George noted that MUF's are averaging at 38 MHz and as high as 41 MHz. Columbus and Hamilton Co.,Ohio should be regulars out in the west. He asks "Nassau Co.,NY uses a weird Modat/MDT. Never heard before. What is it? There is also a delay when it is transmitted on the mobile frequency and then repeated on the output." ANY IDEAS?!?

A very excellent cross section of our country this month. With F2 conditions as they stand, 41.25 and 41.50 MHz (BBC and ORTF TV audio) should be audible for those with VHF AM receivers. Any logging appreciated as long as they fit my format!

Remember! Daylight Savings Time ended on 28 October. PLEASE be sure to note the proper time frame. I am not a mind reader nor work for WWV!

So,until next month, I hope all of you have a Happy Thanksgiving! We should ALL be thankful we have the unique privilege that not any other country has. Let us not take that privilege too lightly nor abuse it.

PLEASE NOTE: Editor's address has been changed back to 724 E. Mulberry St., Lancaster, OH 43130. Do not use address in October issue.

From DON (MD-007): I would like to correspond with any California members who might help me identify some skip reception received here from California. DON BLEVINS, 1715 Earhart Rd., Baltimore, MD 21221.

COMMUNICATIONS CENTER

915 NORTH EUCLID • ANAHEIM, CA 92801

714–635–10-33

ATTENTION ooooooooo!
Limited Opportunity

Scanner enthusiasts—here is your chance to combine the pleasure of your hobby with additional income!

We are now accepting selected areas of the country to sell scanners and accessories. Communications Center is a unique operation with seven years experience as a successful distributor, specializing in scanners and accessories. We have been written about in national magazines, and are a recognized authority on the subject.

Our cost to you and sales tips will probably beat anything you find anywhere. We feel sure that with your experience as a monitor hobbyist and our arrangement it will be of mutual benefit for us to get together!

Write us, enclosing a copy of your state resale/ tax exemption certificate, and provide brief details of your existing or proposed operation. (Check your local agencies for obtaining proper business certificates if you don't have them already.)

ONE OF THE LARGEST SELECTIONS OF SCANNER RADIOS AND ACCESSORIES IN THE COUNTRY

SATELLITES

Bill Blomgren & John Coker, Editors

Send information about satellite frequencies which you have received with type of traffic heard, orbital data, hobby receiving equipment and antennas and questions pertaining to satellite monitoring to: Bill Blomgren, 505 E. Mulberry, #3, Normal, IL 61761.

The majority of satellites orbit the earth in one of two orbital paths. These two orbital paths are known as polar orbits or equitorial orbits. Polar orbits have an inclination or angle of rotation that is equal or nearly equal to 90° when compared to the equator. This means that the satellite orbits the earth from pole to pole. Equitorial orbits on the other hand have an inclination or angle of rotation of nearly 0° and orbit the earth by following the equator. Geostationary satellites have equitorial orbits and are placed over the equator at a height of approximately 23,000 miles. At this altitude a satellite will orbit the earth exactly once every 1440 minutes (24 hours). Since this type of satellite travels in the same direction and at the same speed as the earth's rotation the satellite always appears to remain in the same place in the sky. This constant position makes geostationary satellites extremely valuable for communications systems such as 2-way radio, television, and data transmissions. For this reason we will concern ourselves primarily with geostationary satellites and leave the discussion of polar satellites for a future article.

Where to point your antenna

As with most monitoring, you must know where to point your antenna if you hope to hear the signal. When monitoring a geostationary satellite this same problem exists. The only difference is that instead of having just a horizontal bearing to deal with you must also determine the verticle elevation of your antenna in relationship to the satellite you intend to monitor. In order to decide where to aim your antenna you will first need to determine your distance from the satellite. You must then find the asmuth or bearing from your position to that of the satellite and finally you must calculate how far above the horizon the satellite is in regards to your position. This vertical angle from the horizon to the satellite is sometimes referred to as the "look angle" or "view angle" or simply the "angle of elevation".

How to calculate antenna orientation

The simplest way to calculate antenna orientation is to use a map or globe of the earth and a piece of string. Since all geostationary satellites are located over the equator you must first locate the satellite's position on the equator. To do this simply move your finger across the equator of your globe or map until you reach the degrees corresponding to the satellite's position. For ATS-1 this will be 149°W and for ATS-3 it will be 105°W. Once you have located the satellite's position draw a line or place a string between your position on the map or globe and that of the satellite located on the equator. Measure this distance and note the asmuth or degrees bearing from your position to that of the satellite. Be sure to use the north pole as zero degrees (0°) when determining the asmuth or bearing.

Once you have determined the asmuth or horizontal bearing and the distance you are ready to determine the "look angle". Simply take the distance

in miles which you measured and compare it to the chart below. This will give you the "look angle" or "angle of elevation". As a general rule if your "look angle" is less than ten degrees (10°) above the horizon you may encounter a signal problem unless you have a clear unobstructed path to the satellite. Remember, the asmuth will be the horizontal position of your antenna and will be determined from your map or globe. The "look angle" or "angle of elevation" will be the vertical position of your antenna and will be determined from the distance measurement and the chart below.

VERTICAL ELEVATION CHART	
Angle of Elevation	Statute Miles
90°	0
80°	550
70°	1170
60°	1800
50°	2420
40°	3040
30°	3660
20°	4280
10°	4900
0°	5520

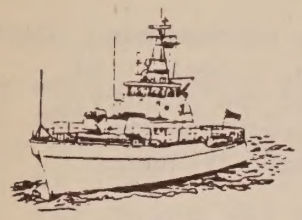
An Example

Let's assume that our satellite receiver site is located in Los Angeles, California, and the satellite we want to listen to is ATS-1. We know that ATS-1 is a geostationary satellite so the satellite will be located above the equator, in this case at 149°W. With the aid of a world map we locate 149°W and the city of Los Angeles. We then draw a line between these two points and measure the distance which is approximately 2,800 miles. Next we determine the asmuth or bearing of the satellite's position from Los Angeles using the North Pole as 0°. In checking our map we find that the satellite is located southwest of Los Angeles at about 225°. Using the vertical elevation chart and our 2,800 miles distance figure we find that our satellite receiver antenna should have a vertical angle of about 44°. With this information we are now ready to point our antenna. Simply swing the antenna to the southwest on a bearing of about 225°. Then elevate the antenna vertically 44° above the horizon. We are now ready to monitor the ATS-1 satellite and no further antenna orientation should be required except for minor adjustments. If we should want to monitor ATS-3 or another satellite we will have to again calculate the proper antenna position and then reorient our antenna.

Editor's Note

It was pointed out to us that in our September column many of the frequencies listed as telemetry downlinks were unintentionally rounded off. The majority of NASA frequencies are allocated in 30 KHz steps,however,NASA has a bad habit of rounding off frequencies in some of their publications. We apologize for these errors. Next month we will include a list of corrected NASA downlink channels.

During the recent hurricane, narrow band FM traffic was monitored on 257.050 MHz and 265.450 MHz. This traffic was apparently being relayed by the Navy's fleet satellite located at 100°W. A mobile satellite terminal located in the Dominican Republic was passing traffic from the United States hurricane relief team to the US mainland. Other traffic from an unknown source not connected with the hurricane team was also monitored on 255.350 MHz and 260.375 MHz.



VHF Marine

Rod O'Connor, Editor

Send information, articles, frequencies and how they are used and questions that relate to private, commercial and Coast Guard VHF maritime and inland waterways radio communications to: Rod O'Connor, USCG Group, 259 High St., South Portland, Maine 04106.

PUBLIC COAST STATIONS
The "Marine Operators"

One of the most overlooked aspects of scanning the Marine Bands are the many Marine Operator Channels in use. Not only along the Gulf, Atlantic and Pacific Coastlines are the Marine operators located, but along and near the Inland River systems. Even large inland lakes which have large recreational boating centers are the sites of some operators.

By using the services of Public Coast "Marine Operator" stations, vessels of every shape and size can make and receive telephone calls to and from any telephone, with access to the nationwide phone network. Calls can even be made to telephones overseas, as well as to other ships and aircraft.

VHF FM SERVICE (Public Class IIIB Coast Stations)

VHF FM Service offers reliable operations with good transmission quality over relatively short distances of up to 50 miles out to sea. However, depending upon the height of the transmitting antenna, ranges of 75 miles are possible.

VHF FM Channels 24, 25, 26, 27, 28, 84, 85, 86, and 87 are available to Public Coast Stations in the U.S. The two most common channels on the air today are 26 and 28. Channels 84 thru 87 are relatively new and are located in areas of strong interference. These new channels are becoming quite widespread throughout the U.S, as more and more boaters take to the water, and more and more phone calls are made.

FREQUENCIES USED BY MARINE OPERATORS

Channel Number	Ship Xmit	Ship Rcv.
24*	157.200	161.800
25*	157.250	161.850
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
84*	157.225	161.825
85*	157.275	161.875
86	157.325	161.925
87	157.375	161.975

* -Channels not available in Puerto Rico or Virgin Is.

As can be seen from the table above, all marine operators use "duplex" channels. When listening for operators on a scanner, the receive frequency is best to listen on. Some operators can scramble the signal, so as not to give away the caller's credit card or billing number.

In the coming months, we will break down the different sections of the U.S., and list individually the operators in that area. Next column should feature California, Oregon and Washington state stations. Hope-

VHF Marine (continued)

fully, if reader response is good, we will work our way to the east coast. Since there are so many members from California, I feel it is only fair to start with the operators in that section of the country first. If all goes well, I will include a map of the area, and the seperate Marine Operator identification as well as working frequency and other information on the station.

Local comments and remarks from other members are always welcome, and very much appreciated.

CANADA

Send Canadian frequency information, radio system details and other information relating to Canadian monitor radio listening and questions to: Rory B. McEvoy, 12 Castlegrove Blvd., Unit 9, Don Mills, Ontario, M3A 1K8. (416) 449-4170 weekends and 7-11 PM EST/EDT weekdays.

First I must apologise for having been a 'no show' over the past two months. One column never got to John Pilger (sorry John) and, to make matters worse I became ill in late August on vacation in VT, NH and NY.
Thank-you to everyone who has phoned or written; surprising as it may seem I have had more communications from U.S. members than Canadians. Some of you are obviously unsure of my location. Don Mills is a suburb of Toronto and I live about eight miles NE of the city centre.
Albert Ellis CAN 010 writes to bring us VHF/UHF back to what is often referred to as "the golden age of radio". Although now living in Brantford, Ontario, Al writes about the good old of eavesdropping on the radio phone circuits between Long Beach, CA and Pebble Beach on Catalina Island. Apparently Al has spent many years living in CA before retiring to Southern Ontario. He still listens to the PTT on 35mHz and has QSLd BBC-TV London, England on 41.5 mHz. Thanks for the memories Al; in these days of digital read-outs and and microprocessors you could teach us much!

Here in Canada equipment is much more difficult (and expensive!) to find. Radio Shack stores abound and carry the same line as the U.S; Bearcat and Regency may be found in major cities ifa persistent search is made. Both the "Indiana Giants" have helpful representatives in Canada but Regency's is exceptionally good. Thanks to Mr, Stu Stovel, President of Lectron Radio Sales, Regency owners here can be sure of excellent custom-tailored service. On the darker side unfortunately is Panasonic who simply will not make the RE 1800 available to Canadian customers. Somebody in their marketing section is certainly more than slightly behind the times!

The question of crystals has been brought up by some members. On a few occasions we have seen references to orders by U.S. residents being returned incomplete with certain frequencies marked "restricted". This does not happen here in Canada where crystals of any frequency may be ordered readily from the manufacturers. Usual price for a standard monitor crystal is $6.95, that is about $5.50 in u.s. funds. Any U.S. members who wish the address of my supplier may drop me a line

or write direct to RCMA. One sideline for members interested in odd frequency reception is R.S.'s Pro 16A. I have tried my 142 mHz crystals in this unmodified set and they work perfectly right down to 142.185!

For those who are not already aware, Canada now has public weather stations in operation. They are: Toronto 162.475, Vancouver 162.400, Montrea and Halifax both on 162.550. The Toronto call sign is XMJ 225 and the 100w transmitter is located at the 1,500 foot level of the C.N. Tower. This system does not replace marine wx transmissions on 161.650, ch. 21.

From Rory:CAN 003

PD Niagara Regional Police		XJF 933	B:142.545	M:138.525
PD Niagara Regional Police		XJF 933	B:142.575	M:138.555
PD Niagara Regional Police		XJF 933	B:142.410	M:138.390
PD Peel Regional Police	ch#7	XJK 706	S:141.585	
FD Toronto City to Ontario Fire Marshal	OFM ch#1	CJW 252	154.070	
Fire Marshal	OFM ch#2	CJW 252	154.190	
FD Toronto City	ch#1	XJG 68	153.950	
FD Toronto City	ch#2		153.980	
AMBMetro Toronto -I/S	ch#1		150.100	
AM Metro Toronto West	ch#2	XJJ 466	149.410	
AM Metro Toronto East	ch#3	XJJ 466	153.905	
AM Metro Toronto S'visor	ch#4		B:151.820	M:154.680
AM Metro Toronto Tactical	#5	XJJ 466	154.920	
AM Metro Toronto S'visor	ch#6		B;152.375	M:155.730
AM Metro Toronto BusAmb.	ch#7		155.640	

Notes on Metro Toronto
Ambulance Service;
Ambulances have chs. 1,2,3,5.
Bus has chs. 1,2,3,5,7,PLUS CB!
Supervisors have chs. 1,2,3,4,5,6.

From Michel:CAN 017

FD Quebec City		154.250
FD Beauport City FD & PD		154.280
PD Quebec City	ch#1	155.850
PD Quebec City	ch#2	155.460
FD Charlesbourg City FD & PD		155.730
FD St. Foy City FD & PD		158.730
PD Quebec Provincial Police (QPF) -Quebec		167.010
PD Quebec Provincial Police (QPF) -Charny		166.830
Other QPF frequencies are		167.340

166.59/166.62/166.65/166.68/166.74/166.80

PD Ontario Provincial Police - Aircraft			M: 42.000
PD Ontario Provincial Police - Vehicles			M: 42.220
PD OPP Detatchment Downsview	XJB 66	B: 42.06	
PD OPP Oak Ridges	XJB 46	B: 42.06	
PD OPP Burlington	XJB 74	B: 42.06	
PD OPP Snelgrove/Mt. Forest	XJB 77	B: 42.06	
PD OPP London	XJB 75	B: 41.96	
PD OPP St. Thomas	XJB 43	B: 41.96	
PD OPP Seberingville	XJB555	B: 42.06	
PD OPP Tillsonburg	XJB 45	B: 41.96	
PD OPP Woodstock	XJB 42	B: 41.96	
PD OPP Peterborough		B: 41.96	
PD OPP Belleville	XJB 79	B:	
PD OPP Niagara Falls		B: 41.98	

CANADA (continued)

PD OPP Toronto - Queens Park
Legislature Buildings S:140.550
PD OPP Toronto - experimental licence S:800 mHz band
PD OPP Toronto - special use B:142.140 M:138.120
Several members have contributed to making the above OPP listing possible. Please keep the reports rolling in. Remember, we need call signs and base locations where possible.

Because of the interest in the legality of monitoring in Canada I am reproducing a portion of an interesting letter from Robert: CAN 009 in CALGARY, Alberta.

"I was also talking to a Radio Shack manager when I bought my 2001. He mentioned a case in Winnipeg a few years back where the R.C.M.P. raided all Radio Shack stores and confiscated all the scanners and the orders for all crystals for the sets. Radio Shack brought in it's lawyers from Texas for the showdown. The ruling was that scanners are legal and the airwaves belong to the public."

Thanks Bob. This will be of particular interest to members outside of Ontario and Quebec.

A legal reference worthy of mention is "Wiretapping Law in Canada; A Supplement to Protection of Privacy Act" by Morris Manning,LL.B., published in Toronto 1978 by Butterworths.. Specific reference is given to cases where charges were made under section 178.18 regarding both tunable and crystal scanners, even where one individual was listening to police on a handheld scanner. This book IS EXPENSIVE so try your library first. If U.S. members wish to see this book the reference for your librarian/bookstore is

I S B N 0-409-84886-7

Bob:CAN 009 writes to ask if CPIC and NCIC are the same thing. Basically Canada's CPIC is similar to USA's NCIC but they are entirely separate and independent of one another. Both systems provide limited access to each others data banks.

That's all from Canada for this issue. If you have not seen your name or listing here then please be patient. Also I shall answer all letters from members,probably much sooner than in the newsletter. Here is a final parting thought for Canadian members. Would anyone be interested in getting together a Canadian Frequency Directory - we could call it

" S C A N A D A M A T E "

NEW MEMBERS (continued from page 38)

IL-054 Scott P. Menke, 383 Vincent Pl., Elgin, IL 60120
IL-055 George W. Fink, 1115 Elm St., Wildwood, IL 60030
IL- David Ewing, 705 N. Warren Ave., Freeport, IL 61032
IL- James Hermann, P. O. Box 551, Alton, IL 62002
IL- Clarence R. Polzin, 2511 St. Charles Rd., Bellwood. IL 60104
KS-006 Kurt D. Swaney, 1620 St. Andrews Dr., Lawrence, KS 66044
MA-021 Gordon G. Newell, Kennedy Rd., Leeds, MA 01053
MA- David Mercer, 15 Cutting Dr., Newburyport, MA 01950
MD- S. Marvin Holverstott, WGAY Radio, 8121 Georgia Ave., Silver Spring, MD 20906
ME-006 Stephen L. Jaocobs, P.O. Box 68, Dexter, ME 04930
ME-007 Richard E. Dore, 122 Washington St., Brewer, ME 04412
MI-020 Robert Kustasz, 7626 Brentwood, Detroit, MI 48234
MI-021 R. H. Wynn, 1924 Dawn Ridge Rd., Walled Lake, MI 48088

(continued on inside back cover)

International

Richard Stein, Editor

This column is for reporting two-way communications frequencies above 30 MHz, radio system details, monitoring experiences and any other information relating to monitoring in countries other than the United States and Canada. Send to: Richard Stein, 456 Barrymore Pl., North Brunswick, NJ 08902.

Greetings! Welcome to RCMA's new International column. This column will cover all areas of the world except for the 50 United States and the Provinces of Canada. That leaves quite an area to cover and my hope is that there will be input from all members who may have had any experience in monitoring throughout the world. Presently we have only 4 members outside of the U.S. and Canada, and we are hoping that everyone will dig into their files and help us with a bit of information.

By way of introduction, my name is Richard (Rick)Stein and I've been monitoring for some 32 years when as a kid of 7 I discovered my Grampa's two band radio. Naturally I turned to the "other" band and soon discovered the N.Y.C. Police on what I now believe to be one of those old frequencies just above the AM broadcast band.

I continued while at the University of Cincinnati in 1959 when I found the city police on 1.706MHz on my Hallicrafters S-38C short wave radio and also discovered that auto radios could just be adjusted upwards enough to include this frequency at the top of the AM dial.

We've all grown with the various developments in scanner radios over the past 10 years, and after experiences with a number of different types of receivers, I am presently using a Regency Touch and a Bearcat 250, each hooked up to its own Hustler Discone antenna.

As for my credentials for this column, in addition to English, I speak and write Spanish, I'm struggling with Hebrew, and I can stumble thru Portuguese and Italian. I have friends who are native speakers in Russian, Hebrew, and German and are willing to help with letters or tapes. My wife Dana and I have been privileged to be able to travel to Mexico twice, Venezuela, Puerto Rico, Spain, and Israel twice and I have done some monitoring in each of these countries with varying degrees of success.

What we need now is your help-that is any piece of information, no matter how small, concerning international monitoring. Stations, systems, calls,laws, or difficulties while in a country are all important.

MARKETPLACE

Members may advertise, free of charge, items wanted, items for sale and items for trade that are associated with the hobby of monitor radio listening above 30 MHz. No dealer ads accepted. Send to: Larry L. Miller, PineCrest Apartments #F-21, Middle Ridge Road, Amherst, OH 44001.

(EDITOR'S NOTE: I would like to apologize to those members who have sent items to me for listing here over the past month and a half or so, and whose items have not been listed until now. Due to our moving recently and recent resumption of work after a long strike, these items were somehow mislaid, but I am including them in this month's column. -- LLM)

FOR SALE: Bearcat 250 packed in original factory carton. Will ship PPD via UPS to any U.S. address. First check for $270.00 gets it. Robert Rhodes, 1277 Glines Avenue, Santa Maria, CA 93454 (805) 937-4331

WANTED: Used SBE OPTI-SCAN cards. Must be able to re-cycle. (800) 227-8054, Ext. 518 outside California, or (415) 961-2550, Ext. 518 in California between 10:00 AM and 3:00 PM, California time. Will discuss price at time of call. Ed Tobiasz, 10525 Mira Vista Ave., Cupertino, CA 95014. No Collect Calls.

FOR SALE: Bearcat 250, complete with all accessories, $225.00. Also: Regency "Digital Flight-Scan" 16-Channel crystal-less aircraft scanner, Model ACT-T-720A, $195.00. Dave McLaren, R.R. #2, County Line Rd., Rock Falls, IL 61071. (815) 626-5443 Weekends only.

FOR SALE: Bearcat 101, excellent condition - like new, $180.00. Tom Pamin, 3151 West 25th St., Erie, PA 16506, or call collect: (814) 833 - 5729 after 6:00 PM, Eastern Time.

WANTED: Regency TME-8A 8-Channel Aircraft Scanner in good condition, less any crystals. Ron Murray, 18935 Sherman Way, Apt. #15, Reseda, CA 91335, or call (213) 344 - 8681 from 7:00 PM to 10:00 PM - Pacific time.

FOR SALE: URR-35 Aircraft Receiver, 220-410 Mhz, includes manual, $50.00. BC 639 VHF Aircraft Receiver, includes companion power supply and manual, $35.00. SBE OPTI-SCAN with cards and manual, $125.00. John, (213) 273 - 0664.

FOR SALE: Military Aircraft receiver, surplus, AN/URR 35, includes antenna, speaker, and manual, $110.00. Prefer to sell in Southern California to avoid crating and shipping. Ralph, (714) 488 - 4553, after 7:00 PM, California time.

FOR SALE: Bearcat Crystals for the following frequencies: 45.28, 154.31, 154.905, 155.16, 155.22, 155.34, 156.03, 156.425, 156.90, 157.05, 157.075, 162.4, 460.025, 460.2, 460.325, 460.4, 463.0, and 468.0. Regency Crystals for: 31.1, 42.02, 48.18, 152.03, 152.63, 153.59, 154.085, 154.31, 154.34, 154.19, 155.055, 155.13, 155.22, 156.03, 163.53, 460.2, and 468.0. $2.00 each. Also, (1) Realistic Pro-4 (VHF-Hi) Pocket Scan - $15.00. Contact: Lewis S. Harvey, 415 E. Hall St., Savannah, GA 31401.

FOR SALE: B/C250 $200 works fine on ac, but will not scan on dc in most cars. B/C says there is a fix, but am tired of hassle and trying to read leds in bright Florida sun and really want a/c on 220 anyway. RCMA, P.O. Box 270294, Tampa, FL 33688.

WANTED: Schematic diagrams for the BC-250, BC-220 or BC-211 receivers? I would be willing to pay for copies. Glenn Reilly, R.D. #1 - Box 158, Great Meadows, NJ 07838.

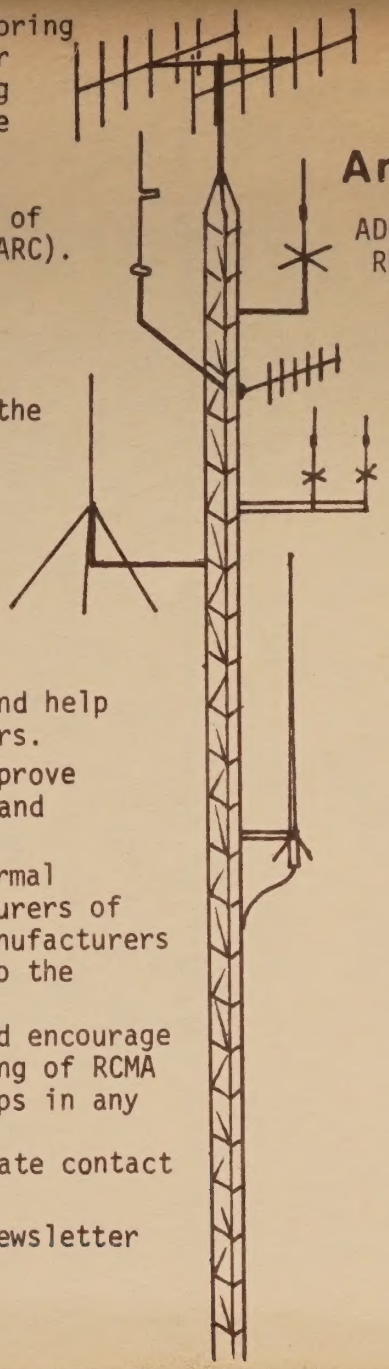
NEW MEMBERS (continued from page 62)

MI-	James G. Sproul, 24 Baltimore Dr., N.E., Grand Rapids, MI 49503
MI-	Gary Bourgois, Studio B, 135 Washington St., Marquette, MI 49855
MN-008	Charles J. Steier, 2910 E. Franklin, Minneapolis, MN 55406
MN-	Al Batt, Box 37, Hartland, MN 56042
MO-	David E. Crowley, 7234 Balson Ave., University City, MO 63130
MO-	Nancy S. Schmitz, 833 Castello, Florissant, MO 63031
NH-006	William O'Connell, 600 Cedar St., Manchester, NH 03103
NH-007	Henry Smith, 177 W. Elmwood Ave., Manchester, NH 03103
NH-008	Joe Crawford, 8 Oak St., Milford, NH 03055
NJ-020	John Fischer, IV, 11 Lafayette Ave., Toms River, NJ 08753
NJ-021	Robert A. White, 200 East Allendale Ave., Allendale, NJ 07401
NJ-022	Walter B. Doherty, 200 Lembeck Ave., Jersey City, NJ 07305
NJ-023	Howard, Gloucester City, NJ 08030
NJ-024	Bill Hosfield, 95 Narrumson Rd., Manasquan, NJ 08736
NJ-025	Mary, Dumont, NJ 07628
NJ-026	Harvey E. Hills, 102 Pearl St., New Providence, NJ 07974
NJ-027	James Jackson, 64 Tallmadge Ave., Chatham, NJ 07928
NJ-028	Robert J. Lever, 891 B Boulevard, New Milford, NJ 07646
NJ-	Pete Soroka, 150 High St., Apt. #B-2, Orange, NJ 07050
NY-053	Harold E. McNeal, GPO Box 31, Brooklyn, NY 11202
NY-054	David Komorowski, 67 Linden St., Yonkers, NY 10701
NY-055	Charles, Poughkeepsie, NY 12603
NY-056	Vinny, P.O. Box 141, Manhasset, NY 11030
NY-057	Dennis Ruda, 42 Harry L Dr., Johnson City, NY 13790
NY-058	H. Michael Yuhas, P.O. Box 343, Port Jefferson, NY 11777
NY-059	George Davis, Box 67 Village Sta., New York, NY 10014
NY-	John J. Dee, Sr., 42 Burhans Ave., Yonkers, NY 10701
OH-022	Bill Baus, 117 Edwin S.E., Massillon, OH 44646
OH-023	Dennis M. Burgess, 495 Jeannette Dr., Richmond Hts., OH 44143
OH-024	Mark James Brown, 3940 Sturtz Dr., Zanesville, OH 43701
OH-025	Lee Bendick, 12 No. 21st St., Newark, OH 43055
OH-026	Bob Ward, 7723 Arlington Ave., Cincinnati, OH 45230
OH-027	Paul Beerbower, RR #3, Montpelier, OH 43543
OH-028	Jack Abele, 3978 Warren Ave., Cincinnati, OH 45227
OH-	Robert Lee Satterwhite, 910 Valdes Ave., Akron, OH 44320
OK-007	Bill Morton, 1117 W. Padon, Blackwell, OK 74631
PA-030	Al J. Butkiewicz, 852 Main St., Dickson City, PA 18519
PA-031	C. A. Chamberlain, 10 Old North Rd., Mountaintop, PA 18707
PA-032	Harry N. Blumner, 1012 Marietta Ave., Lancaster, PA 17603
PA-033	Irvin Bruskin, 2451 So. 5th St., Philadelphia, PA 19148
PA-	Ralph Caminitti, 7000 Clover Ln., Upper Darby, PA 19082
RI-003	Thomas V. Frail, Jr., 30 Oak Hill Ave., No. Smithfield, Woonsocket, RI 02895
SC-005	Michael L. Cox, Rt. 1, Box 86, Garden City Beach, SC 29576
TN-	William E. Leath, 2406 Sterling Rd., Nashville, TN 37215
TX-019	Rodney P. Waring, 450 Bertetti, San Antonio, TX 78227
TX-020	Rexx Behring, P.O. Box 732, Lytle, TX 78052
TX-021	Steve Hiegel, P.O. Box 24373, Dallas, TX 75224
TX-	Irvin Smith, 3915 Point Clear Dr., Missouri City, TX 77459
TX-	SSG Thomas E. Hoffman, HHC, III Corps, G5, Ft. Hood, TX 76544
VA-015	Frank Green, 79 Holly Point Rd., Grafton, VA 23692
WA-009	Matt McVay, 8025 SE 33rd Pl. #1A, Mercer Island, WA 98040
WA-010	James E. Foulke, 14 SE 16th St., Chehalis, WA 98532
WA-011	I. H. Pepper, P. O. Box 295, Long Beach, WA 98631
WY-	Thomas E. Burt, POB 9112, Casper, WY 82609
CAN-022	Bruce Schau, 577 Joyce Blvd., Milton, Ontario, Canada L9T 3C9
CAN-	Guy W. Hillmer, 2 Sultan St., Apt. 603, Toronto, Ontario M5S 1L7

The Radio Communications Monitoring Association is a radio club for persons interested in listening to two-way communications above 30 MHz as a hobby. RCMA was founded in May 1975 and is a Full Member of the Association of North American Radio Clubs (ANARC).

The goals of RCMA are:

1) To provide a fraternity for those who seriously pursue the hobby of monitor radio listening.
2) To try to be knowledgeable about two-way radio systems and operations.
3) To promote an understanding of the legal and ethical uses of monitor receivers.
4) To share information with and help other monitor radio listeners.
5) To try to understand and improve receivers, antenna systems and related equipment.
6) To offer suggestions and formal recommendations to manufacturers of monitor receivers and to manufacturers of other products related to the hobby.
7) To offer suggestions for and encourage the organizing and conducting of RCMA meetings and tours for groups in any geographic area.
8) To encourage and to facilitate contact between members.
9) To publish a regular club newsletter devoted to the hobby.



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